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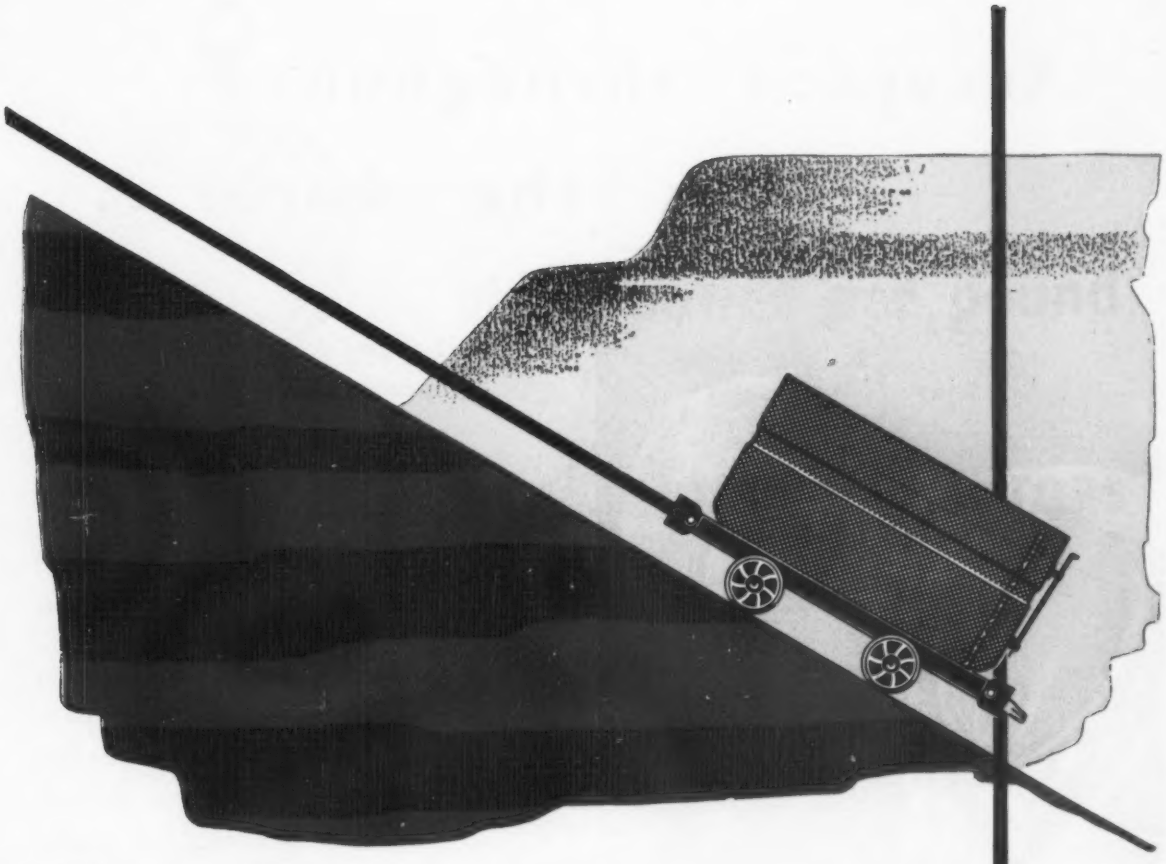

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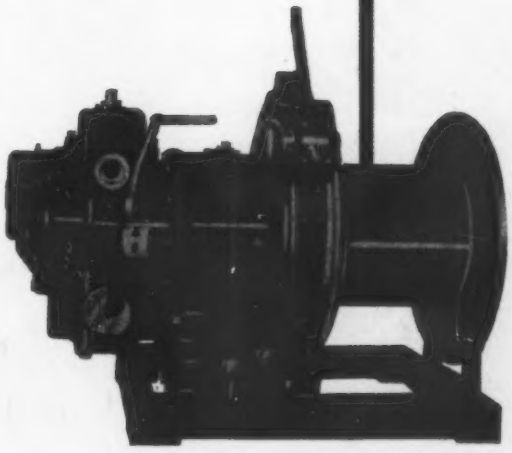

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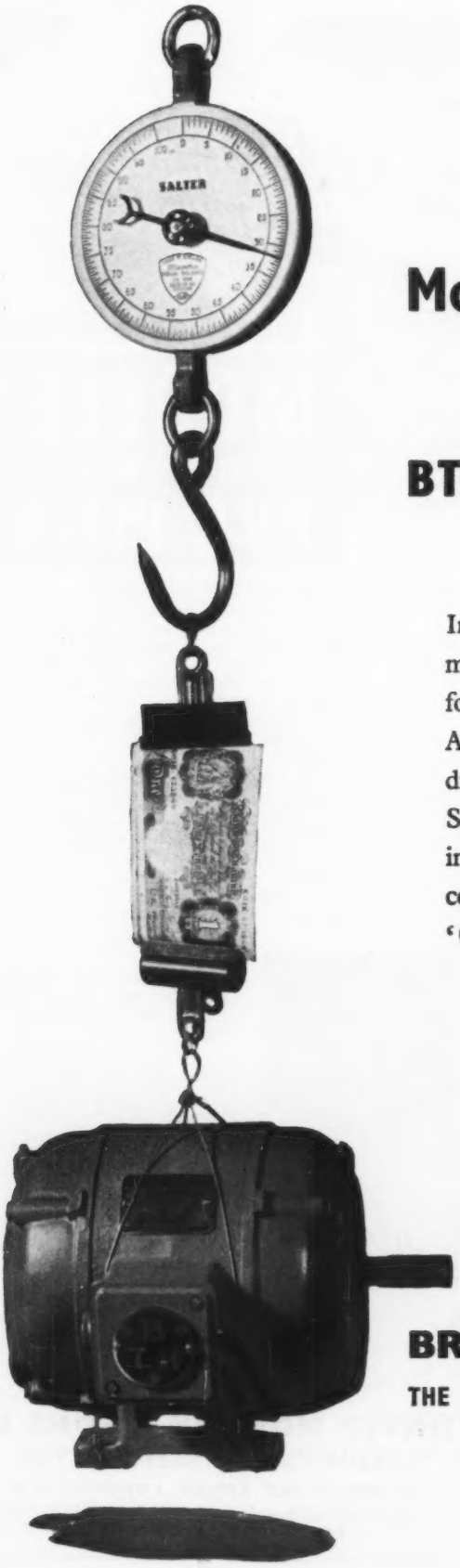

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The I.T.C. Stands Fast

AT this grim period for tin producers, when the International Tin Council is fighting a holding action, it is salutary to remind ourselves that the basic problem of the tin mining industry still remains that of finding enough metal for future needs.

Although the rise in consumption has been temporarily halted, the growth in world populations coupled with improving living standards are an assurance that over the years the trend will continue upwards, assuming—as seems reasonable—that new uses will replace at least in part expected losses in existing applications.

On the other hand, the post-war years have brought no major additions to Free World ore reserves from new discoveries, other than the tin-tantalum-niobium bearing pegmatite found by Géomines below their existing workings in the Belgian Congo.

So far as Malaya is concerned, the improved security position last year permitted an extension of prospecting, but the available areas examined have not so far produced any sizeable new tin-bearing lands, although it seems probable that considerable hidden resources must exist. The most likely areas in which to find alluvial tin are still centres of military operations.

The vital importance of tin to the Malayan economy is officially admitted, but what is being done to encourage this essential industry and enable it to remain in business? In his speech at the annual general meeting of the F.M.S. Chamber of Mines (see page 671) held at Ipoh on May 29, the vice-president, Mr. K. J. Cumming, urged the need for a more favourable climate for re-investment and for a more liberal land policy. As he pointed out, capital re-investment is just as important as capital investment, and it is indeed tragic that capital and plant already within the country cannot be employed because of the non-availability of land. Unless there is a more liberal land alienation policy, Malaya's tin production will rapidly decline with devastating effect on the economy of the Federation and on future world supplies. At April 30, 1958, no fewer than 14 dredges were closed down not because of tin restriction but because of the exhaustion of their ore reserves. The position is therefore serious, as many more mines are rapidly running out of land. The formation in January this year of a National Land Council, one of its functions being to advise the Federal Government and the State Governments on land problems, has been welcomed by the mining industry as a step in the right direction, but time is running out.

Unless available reserves can be very greatly increased, whether by discoveries of new alluvial fields or by the development of new lode mines, the long-term trend must be for demand to outstrip supply. Once present difficulties have been surmounted, the outlook is thus for growing markets at prices sufficient to encourage the search for alluvial deposits and perhaps also the uncovering and development of buried lodes.

The basic strength of the tin mining industry and its sound statistical position are well known, but they tend to be obscured by the persistence with which cash tin remains rooted to the floor. To producers anxiously awaiting the long anticipated rise in price to offset the drastic production cuts, it must seem at times that the

I.T.C.'s export quotas are as ineffective as all the kings and all the king's men when they tried to reassemble Humpty-Dumpty.

As was to be expected, there has been a good deal of disgruntlement in most of the producer countries. Thai miners, for instance, clamoured for their country to withdraw from the pact when it failed to obtain a 10 per cent quota at the latest meeting of the I.T.C. in London. Fortunately the governments of Thailand and the other producing countries are realistic enough to appreciate that, whatever the hardships resulting from curtailment of production, the plight of the tin mining industry would be infinitely worse if exports were uncontrolled. Some of the other major metals, for which no international control scheme exists, have fared very much worse than tin.

That the price of tin has so far failed to respond to the export restrictions, which have been in operation for nearly six months, is due in part to the increasing flow of Russian tin, and in part, to the absence of American buying. Quite a sizeable quantity of Russian tin has been landed in the United Kingdom and it is thought that several hundred tons have recently arrived in Liverpool.

In view of the heavy exports from Russia and Poland in January and February, it seems not improbable that Russian and Chinese deliveries of metal in 1958 might exceed last year's total by about 5,000 tons. This additional tonnage, however, would fall far short of filling the gap between production and consumption of tin, calculated on the current rate of supplies.

The fundamental question facing the tin market at the present time is, of course, what the demand for metal is likely to be during the remainder of the year. In their latest review of consumption prospects, A. Strauss and Co. assume an overall fall in world tinplate production of 5 per cent. If the world trade recession became materially worse and the purchase of tin by other consumers fell by 30 per cent, total world consumption of tin would fall by 18 per cent and would be about 129,000 tons compared with 157,500 l.tons in 1957. Tin supplies, on the present quota basis, would be 92,000 tons from the I.T.A. countries together with 12,000 tons from other producers and possibly 15,000 tons from Russia and China, giving on this pessimistic assumption a net deficit of 10,000 tons. The buffer stock manager would probably be ready enough to convert this amount of tin into cash reserves.

It is surprising that, despite the impending shortage, American consumers have so far been slow to cover their requirements. This reluctance may be partly due to propaganda, and partly to consumers' stocks being higher than had been expected, but doubtless it stems mainly from the general lack of confidence engendered by the recession. Once the effects of the export restrictions begin to be more widely felt, American consumers may well find it prudent to revert to their normal practice and cover themselves for a longer period, particularly if the recession continues to show signs of flattening out. In doing so they would give a further impetus to the upward swing of prices which, unless world trade takes a sharp turn for the worse, can scarcely be much longer delayed.

Indeed, once the tin price has left the floor, its ascent to ceiling level might be surprisingly rapid. As A. Strauss and Co., also point out, it is perhaps not generally appreciated that the authority given to the buffer stock manager to sell metal, if he so desires, at £781 a ton, is related to the present low export quota. As soon as the quotas are reduced to a less severe level the minimum selling price might well revert to the £830 figure of the International Agreement.

Meanwhile, the buffer stock has behind it the positive achievement of keeping the price of tin near the support level during the period of exceptional difficulty. Despite inevitable dissatisfaction among producers with the drastic output cuts, the International Tin Council with the backing of its constituent members' government should be strong enough to weather the present period of adversities and reap the benefits of the policy which it has consistently and courageously pursued.

MINING LAWS OF FRENCH WEST AFRICA

The present mining laws in French West Africa have been summarized by Marcel Van Essen in a report published by the Bureau of Mines, U.S. Department of the Interior (*Mineral Trade Notes*, Special Supplement No. 51, February, 1958).

On September 12, 1957, a series of new decrees, dated November 13, 1954; May 20, 1955; February 24, 1957; April 4, 1957, and July 30, 1957, were promulgated in French West Africa. Implementing regulations of these decrees have not been worked out by the authorities, however, and their application is therefore handled on a special basis.

Although the implementing regulations have not been issued, the codified version of the decrees presents several points concerning the acquisition of exploration and exploitation permits.

Quarries are defined as deposits containing materials used for construction and for the improvement of soil cultivation and other similar materials except phosphates, nitrates, alkaline salts, and other allied salts found in the same deposits. Peat bogs are considered as quarries.

Mines are defined as deposits containing all other minerals not enumerated above. Mineral substances extracted from mines are considered as substances for which concessions may be granted.

Exploration permits or exploitation permits are subject to the obtaining of a personal authorization. Such authorizations cover more than 2,000 sq. km. each.

The personal authorization is granted by the chief of the territory (formerly called the Governor) with the assent of the territorial Government Council for all mineral substances except fissionable material or other materials useful in the realm of atomic energy, liquid or gaseous hydrocarbons, bitumens, asphalt, schists, bituminous sandstones, and potassium and allied salts. The granting of personal authorizations for fissionable materials is subject to the jurisdiction of the French Atomic Energy Committee. The Ministry of Overseas France is responsible for the other minerals mentioned in this list of exceptions and the assent of the Minister of Industry and Commerce is also required in obtaining the personal authorization for these minerals.

The holder of an exploitation permit or a concession covering hydrocarbons, etc., must first satisfy the internal needs of the territory or group of territories (Federation) and must devote the balance of his exploitation to supplying the French franc zone.

Prospecting permits for potassium and allied salts will be delivered only after receiving permission from the Minister of Industry and Commerce. Prospecting and exploiting such mineral deposits can only be entrusted to the State Potassium Mines of Alsace, to the Bureau Minier de la France d'Outre Mer, or to a company whose organization has been approved by a joint decree of the Minister of Finance, the Minister of Economic Affairs and Planning,

the Minister of Overseas France, and the Minister of Industry and Commerce.

No company can obtain a personal authorization or hold a mineral title if it is not constituted under French Law. Future implementing decrees will determine the conditions under which persons or companies will be allowed to exercise mining actvities. Their nationality or the nationality of their leading executives will be one of the elements taken into consideration.

Applications for exploration or exploitation permits must specify the minerals for which they are intended. Discovery of other mineral substances than those specified in the application must be reported and the appropriate permits applied for.

Not only economic progress but also the country's political evolution will closely influence mineral development. It is believed that the mining regulations based on the decrees promulgated on September 12, 1957—if not the decrees themselves—may soon be substantially altered.

HELP FOR AUSTRALIAN COPPER PRODUCERS

The findings of the Tariff Board in regard to ways of assisting copper producers in Australia, embody the following provisions :

Assistance is to be given in such a way as not to penalize copper consuming industries in the matter of costs, in competition with industries able to buy their requirements at world market price. The price receivable by copper producers has been fixed at £A330 per ton. A protective tariff will be imposed on imported copper to ensure that the landed price at duty paid will not be less than £A285 per ton. This will be the price at which local consumers will buy from the producers, a bounty, to bring the return to the producer to £A330 per ton being paid at a maximum rate of £A45 per ton, reduced by £1 for each £1 by which the Australian price (i.e. the landed, duty-paid price of imported copper) rises above £A285. The bounty will be payable on the copper content of copper concentrates or ores, mined in Australia and delivered to a copper smelter, for use in Australia as refined copper. The bounty will be subject to a 10 per cent profit limitation, applied to capital employed in the production of copper for home consumption.

There is provision to withhold a portion or all of any bounty payable to a producer who places on the domestic market a greater quantity of copper than is considered reasonable. The bounty will not be payable on copper produced from scrap or copper-bearing residues derived from the processing of other metals.

Mount Lyell Mining and Railway Co. and Mount Morgan Ltd. will definitely benefit. The copper bounty will ensure the continuation of profits by Mount Morgan, and the company states that it is hoped that the Tariff Board's recommendation on the Sulphuric Acid Bounty Act—yet to be announced—will enable the company to increase sales of pyrites and thus eliminate the necessity of a bounty on copper production. It is considered that Mount Isa Mines, however, will be penalized by the 10 per cent profit proviso to the extent of some £A500,000 per year, for this company will be ineligible to qualify for the bounty on local sales. About 60 per cent of the copper output is sold on the overseas market at the lower price prevailing. Since the company is incurring very heavy expenditure in its expansion programme, the bounty of £45 per ton on some 12,000 tons of copper per year sold in Australia would mean substantial financial help.

The Peko Mine, in the Northern Territory, which produces both gold and copper, will qualify for part of the bounty, but will limit production because of lack of an economic market.

Generally, the decision is regarded as favourable; production will be stabilized and the industry assured of continuance on a reasonably satisfactory basis, balanced between producer and consumer. The adverse factor is the lack of assistance to the country's largest producer, Mount Isa Mines.

GEOLOGICAL RESEARCH IN THE SOVIET UNION

Despite the fact that, in population and square mileage, the entire franc area is equal to approximately half of the equivalent Russian totals, the French-speaking world spends only £175,000,000 a year on geology compared with the £1,000,000,000 allocated to the science in the U.S.S.R. These estimates are put forward by P. Laffitte in *Annales des Mines*, Paris, and the author concludes that governmental action is particularly suitable for planned geological investigation.

Four union ministries in the U.S.S.R. spend the bulk of this annual investment, namely those of geology (30 per cent); petroleum (25 per cent); coal (17 per cent); and nonferrous metals (17 per cent). Smaller proportions are spent by the ministries concerned with ferrous metals, chemistry and construction.

Of the 20,000 geologists in Soviet Russia, some 12,000 work for the Ministry of Geology; less than 2,000 are employed in the entire French Union. The number of Russian university students and graduates in geology is particularly striking.

THE CHILEAN COAL INDUSTRY

A recent Overseas Economic Survey, entitled "Chile", provides some interesting details of the coal industry of that country. The Chilean coalfields are in the industrial area around Concepcion and are currently producing some 2,000,000 tons per year. Apart from 250,000 tons of metallurgical coking coal imported annually, Chile is self-sufficient as regards solid fuel.

Most of the country's coal output is mined by two big companies, Lota and Schwager, both of which are at present engaged on extensive development projects. Some of the money for these development plans has been loaned by the International Bank to be used for the purchase of foreign mining equipment. Productivity is very low by European standards; overall O.M.S. is of the order of 0.45 tons. Working conditions are, however, fairly difficult and most of the mines are under the sea. Mechanization is very limited at the moment and haulage facilities are poor. The Compania Carbonifera e Industrial de Lota, which is by far the biggest coal company in Chile, is to spend almost $16,000,000 in developing its mines. Much of this money is to be utilized for the reorganization and exploitation of the company's newest mine which was sunk in 1930.

By the mid 1960's it is expected that total annual production of coal will be about 2,500,000 tons—mined with a greatly reduced labour force.

Johns-Manville in

Founded by H. W. Johns, a pioneer in roofing and insulation products, in a New York basement in 1858, the vast Johns-Manville Corporation, as it is known today, incorporates twenty-six manufacturing plants and four mines and employs about 21,300 persons. Following long and continued research and experiments with asbestos fibres obtained from outcroppings on Staten Island, N.Y., Johns began to manufacture specialties composed wholly or in part of asbestos fibres, many of which came to be recognized as standard articles for mechanical, structural, and electrical uses. Johns died in 1898 and, in 1901, the Manville Covering Co. of Milwaukee merged with the H. W. Johns Manufacturing Co. and under a programme of diversification of production, Johns-Manville has grown to be the largest producer of asbestos-base products and one of the largest producers of asphalt building supplies in the United States.

OF the four mines operated by Johns-Manville three are concerned with the winning of asbestos and one with the quarrying of diatomite. Best known of the asbestos undertakings is the Jeffrey Mine, at Asbestos, Quebec, operated by Canadian Johns-Manville, which is the largest asbestos mine in the world and produces more than half the asbestos fibre mined in Canada. Even at the present high rate of production of more than 500,000 tons of high grade fibres a year, the estimated reserves of this mine are sufficient for more than 75 years.

Because asbestos-bearing rock is generally located near the surface of the earth as well as at considerable depths, most Canadian mines have, at one time or another, employed both open pit and underground methods of mining. The trend today, however, is toward underground mining, since most of the open pits have now been worked to the economic limit. This applies to the Jeffrey mine, where most of the ore is won by underground block caving.

Each area to be caved is represented by a block or cube measuring 200 ft. square and extending upward about 400 ft. to the bottom of the pit. Each block contains approximately 1,500,000 tons of ore.

Slusher in operation underground at Asbestos, Quebec

At right angles to the main haulage drifts, haulage cross-cut tunnels are driven at 200 ft. intervals under the area to be caved. In each 200 ft. square block eight slusher drifts are driven at right angles to and above the haulage cross-cuts. From the slusher drifts, funnel-like draw points are excavated upward.

A 7 ft.-high slice of the large block to be caved, the undercut, is honeycombed by drilling, the miners working from undercut drifts located directly above the slusher drifts. The draw points are then extended to the undercut drift which is then blasted in progressive stages. The fractured rock is withdrawn and the caving starts.

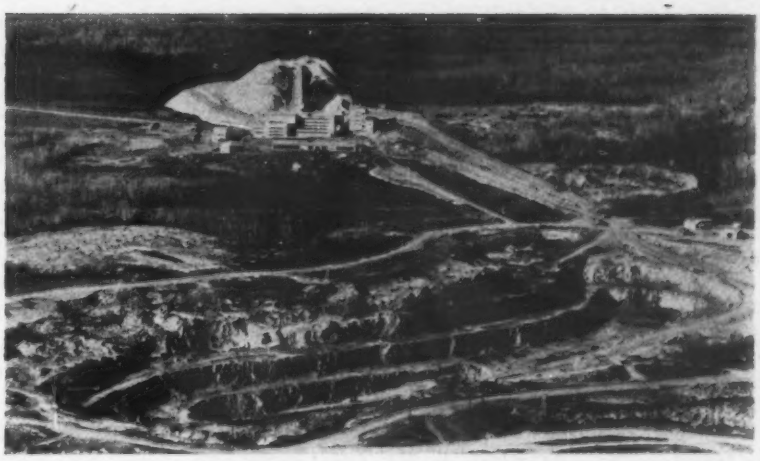
Falling through the draw points and overflowing into the slusher drifts, the rock is removed by an electrically-operated slusher to an opening at the end of the drift, where it falls into waiting cars in the cross-cut tunnel. When loaded, a ten-car train is despatched to a rotary tipple where the cars are emptied, two at a time, the ore sliding down a large chute to the primary crushers, which are located 66 ft. below, at the 816 ft. level, where the rock is broken into 6 in. fragments.

From the crusher, the ore goes downward into bins and then to a loading pocket whence it is hoisted to the surface by fast-moving 12½-ton skip buckets operated by push button control. Each 12½-ton bucket load of ore that is brought to the surface yields less than 2 tons of asbestos fibre, the remainder being waste rock.

With the use of modern safety devices, block caving as practised at the Jeffrey mine, is claimed to be the world's safest method of underground mining.

In 1956, Canadian Johns-Manville completed the construction of a new 14-storey asbestos fibre mill at the Jeffrey Mine. It is the largest asbestos mill in the world, and, in floor space, is one of the largest buildings in Canada. It has a present capacity of 625,000 tons of asbestos fibre a year. Because of current and anticipated demand for asbestos fibre, both underground mining and mill facilities are being expanded. In 1957, four additional primary milling lines were completed there to replace facilities in an older mill which had become obsolete. The new mill also contains an extensive laboratory and pilot plant for research on the mining and milling of asbestos ore to produce the highest quality grades of fibre and to extract the maximum amout of fibre from the ore under the most efficient mining methods.

At the mill, the process is fundamentally one of separating the fibres from the mother rock by a series of crushing operations, following each of which the ore is passed over vibrating screens. These crushing, screening and lifting operations are repeated until all the fibre has been separated and only waste rock remains.



Aerial view of Canadian Johns-Manville's Munro mine and mill, located 12 miles east of Matheson, in Northern Ontario. Foreground, open pit asbestos mine; background, mill buildings and tailings pile

Centenary Year

By JOHN GRINDROD

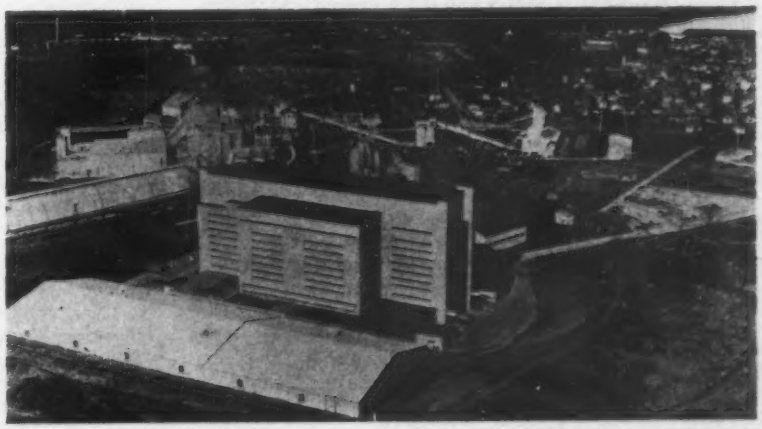
From start to finish the operation is continuous, the rock and unopened fibres travelling by conveyor and gravity from one operation to the next and the separated fibres being drawn upward by air currents to large cyclone type collectors through an extensive system of ducts. The mill has an air handling equipment capable of dealing with a total of 2,500,000 cu. ft. of air per min. For the aspiration of asbestos fibre from the ore milled in the building and for the mill's modern dust control system, there are eight fans, each with a capacity of 123,000 cu. ft. per min. There are some 30 acres of cloth bags in the dust filter system, with four miles of dust control piping and more than 4,000 dust enclosures.

After separation, the fibres are thoroughly cleaned and carefully matched to 80 different grades which range in length from major fractions of an inch down to fibres so short that they resemble a fine powder in appearance. The cleaned and graded fibres are packed in 100 lb. containers. Research and development facilities located in the company's new asbestos fibre mill at Asbestos, Quebec, are divided into four main sections:—a pilot plant, consisting of regular "production size" equipment for developing and checking regular mill operations; a small scale pilot plant for processing and analysing diamond drill cores and ore samples up to 1,000 lb.; a fibre processing system for the development and production of specially processed and blended fibres; and test laboratories.

Some experiments now in progress include the sizing of ore after it has been crushed; the quantity and quality of recoverable fibres; and analyses of diamond drill cores, not only from the Jeffrey Mine, but also from other asbestos ore deposits in which the company is interested.

In addition to the new research facilities at Asbestos, Quebec, there is the main Johns-Manville Research Centre, near Manville, N.J., which claims to provide the largest research facilities in the world devoted to building materials, insulations and allied industrial products.

At Munro, Ont., Johns-Manville are developing an asbestos deposit said to have qualities which make it superior for certain products to any other grade produced



Aerial view of Canadian Johns-Manville's mining, milling and manufacturing operations at Asbestos, Quebec. Foreground, world's largest asbestos fibre mill, with warehouse; at right, headframe for underground mining; background, open pit mine and manufacturing plant

by the company. This mine and mill started production in the summer of 1950 and the average yearly rate of production of asbestos fibre in 1951-55 was approximately 23,800 tons. Underground mining is being developed there and production from the underground mine is to start in mid-1958.

In Southern Rhodesia, an asbestos mine and mill were placed in operation at Mashaba, which is majority-owned by Johns-Manville. Of the chrysotile type, the fibre provides the company with an even greater variety of raw material which is suitable for the manufacture of asbestos-cement products.

The diatomite quarries and mills of Johns-Manville are located at Lompoc, Cal.; modern crushing and special processing equipment is installed for the production of improved filtration and filler Celite products. The average yearly rate of production of the processed ore is rather more than 150,000 tons.

Following the completion of the extension to its Asbestos, Quebec, mill and the sinking of a second shaft to the Jeffrey Mine underground workings, Canadian Johns-Manville is now to undertake a $3,850,000 programme designed to extend the life of the open pit mine there into the early 1960s. To this end, some 5,300,000 cu. yds. of overburden will be removed from the pit site and will be carried by truck to a dumping ground about a mile from the pit.

This is intended to make several million tons of additional ore from the open pit available for processing and to give a more flexible and uniform production. It will also help to balance costs, since open pit mining is less expensive than underground mining.

Special arrangements are being made to avoid disrupting the traffic in the town of Asbestos by the movement of the trucks carrying the overburden.

Also included in the programme are the provision of new mill slips, crushing facilities and additional dryers.

Design and Operation of Heavy-duty Compressed Air Plant

In a paper read to the North Staffordshire Branch of the A.M.E.M.E. on *Aspects of Design and Operation of Heavy-Duty Compressed Air Plant*, J. H. Cooper, of Belliss and Morcom Ltd., described briefly the types of plant in modern use and then dealt in greater detail with the vertical reciprocating compressor which has held favour so long with the mining engineer and which the author believed to be the best compressor for the heavy continuous duty required at collieries.

COMPRESSORS may be classified as reciprocating compressors, turbo-compressors and rotary compressors, Mr. Cooper pointed out.

Of the reciprocating compressors, the motor-driven reciprocating compressor was undoubtedly the commonest type in use at most modern collieries. Direct-coupled, with or without the use of a combination baseplate, totally enclosed, and automatically forced-lubricated, these machines were generally fitted with plate-type suction and delivery valves and incorporated a distance piece between the casing and the cylinders.

The tandem-type steam-driven reciprocator was now commonly of vertical design with air cylinders above or below the steam cylinders depending on the size of the plant, large compressors having the air cylinders below because of their weight and bulk, a 5,000 cu. ft./min. machine having a low pressure cylinder and guide of approximately 10¼ tons weight. Though permitting easy variable speed control, they had disadvantages of height and the tendency for manufacturers to superimpose steam cylinders on the lower parts of a standard air compressor to save initial cost, with resultant excessive loading and greater bearing wear.

Driven by a separate steam engine, usually direct-coupled, the vertical steam-engine driven reciprocator, said Mr. Cooper, was ideal in that it permitted variable speed control with simpler overhaul and usually less bearing wear than in the case of tandem sets, but it occupied greater floor space and its initial cost was higher.

Though seldom seen at collieries, gas-engine-driven reciprocating compressors offered an attractive combination with the use of methane (CH_4) and was worthy of consideration by mining engineers. A recent development in this sphere of waste gas compression was the dual-fired, oil-engine-driven gas compressor.

A successful arrangement for large outputs of 7,000 cu. ft./min. to 10,000 cu. ft./min., the double-ended, motor-driven reciprocator, consisting of two identical compressors driven by a single motor, direct coupled, had greater isothermal efficiency than the centrifugal type. For a 10,000 cu. ft./min. unit this ratio was in the region of 1.14 : 1 and one compressor could be used while the other was shut down for attention.

In the field of turbo-compressors, the author thought the direct driven, single cylinder, high-pressure turbine-driven unit was not an attractive proposition below 5,000 cu. ft./min. because of its low isothermic efficiency compared with that of the reciprocating machine for pressures of 80 lb. p.s.i. and above. For capacities in the range 5/60,000 cu. ft./min. and for pressures up to 120 lb. p.s.i. it was successful for commercial use and could possibly be still further developed.

Great savings could be made in using otherwise waste steam, where this was available, in a mixed-pressure turbine driven unit, though the mixed pressure might bring troublesome complications and it was important that the governor be capable of acting quickly.

So far, the turbo-cum-reciprocator had not yet found favour, though it had certain points to recommend it, including possible good isothermal efficiency with greatly decreased weight.

It was only in special circumstances that rotary compressors were of particular interest to the mining engineer.

Then, returning to the vertical reciprocating type of machine, Mr. Cooper selected that of Belliss and Morcom Ltd. for closer study. Of this type of machine there was a total capacity of over 6,000,000 cu. ft./min. in service throughout the world.

In this two-stage machine, the compressor was of vertical, two-crank, double-acting design. In the first stage cylinder, air was compressed up to 28 lb. p.s.i.g. and discharged at a temperature of 250 deg. F. into a tubular intercooler. Here, the temperature was reduced to about 75 deg. F. or approximately between 15 deg. F. and 20 deg. F. above ambient, before the air was drawn into a second stage cylinder, where it was further compressed up to 120 lb. p.s.i.g., depending on requirements, most mining installations working at a pressure of 80/100 lb. p.s.i. The motion work was forced-lubricated by means of a gear type or valveless plunger pump while cylinders and piston rod packing were lubricated by a sight feed lubricator generally positively operated from the crankshaft.

The air cylinders were water-jacketed round the cylinder bores and at the top and bottom ends while the stuffing boxes were fitted with metallic packing, scrapers being placed in the casing top to prevent crankcase lubricating oil being carried up. The oil was also prevented from being drawn into the air cylinders. Rowan type rings, designed to exert a constant pressure of about 7 lb. p.s.i. on the cylinder walls, were fitted in the pistons. The automatic air valves were of the Rogler-Hoerbiger concentric ring type.

With vertical design giving rigidity and strength and with air cylinders, casing and bedplate forming one compact unit, perfect alignment of the motion work, practically independent of foundations was assured. Less wear called for a minimum of lubrication.

Forced Lubrication

Although high speeds may result in greater running costs, the speaker pointed out that, nevertheless, vertical enclosed compressors working with forced lubrication had many advantages in being well suited for comparatively high rotational speeds. Because of the uniformity of torque and high rotational speed only a comparatively light flywheel was necessary, and, in fact, for a direct-coupled motor set only a barring wheel was needed. Flexible couplings were not required, the cheaper solid coupling being preferred.

Under the forced-lubricating system an ample and continuous supply of lubricating oil under pressure was passed to the bearings and main crosshead guides from a valveless plunger type pump driven by an eccentric on the crankshaft. The pump plunger worked in a barrel fitted into a trunnion which rocked to and fro so that the port in the base of the barrel was brought alternatively opposite suction and discharge ports in the pump body. Lubricating oil was drawn from the well of the crank chamber through a strainer and delivered to the various bearings; then through drilled holes in the crankshaft to the bottom end bearings; thence travelling up the connecting rod to the crosshead bearings and slipper faces. A relief valve was fitted in the pressure circuit to leak off oil at a predetermined pressure, since the pump had a capacity greatly in excess of normal requirements.

On the subject of valves, the speaker said that the thin valve plate in one form or other had come to stay and the Rogler Hoerbiger concentric ring type had proved reliable, comparatively cheap to renew and able to work in almost any position. It consisted of a concentric ring plate falling on a cast iron seat, those parts forming a connection between the centre and the concentric rings being carefully ground to give a central springy portion. Frictionless, silent, air-tight operation was thus assured. It was also light, especially in proportion to its surface area and its small lift enabled it to operate for comparatively long periods without breakage or failure.

To achieve increased efficiency for higher rotational speeds a thin plate valve had been developed, which, by doing away with the central springy portion, allowed more rings and therefore had a greater area. For higher rotational speed, the air speeds through this valve had been reduced, resulting, along with some other modifications, in a high efficiency compressor, still being instantaneous in action and silent and frictionless.

The author said that it was essential for air valves and pistons to be maintained in good condition. Losses from such faulty parts could be detected by indicator diagrams or by a standing test for leakages too small to affect the running intercooler pressure. Faulty air valves and pistons increased the possibility of explosion since the air slipped back and became excessively heated. The N.C.B. were now insisting on thermostatic alarms and stopping devices being fitted to prevent excessive air temperatures.

In most compressors the air valves were disposed in a separate valve chamber but in the latest design they were fitted in the cylinder bore where the valves were most effectively cooled. In both cases, cooling efficiency was high where the jacket was complete as compared with a compressor where the valves were arranged in the cylinder ends.

The intercooler worked on a system approximating to the contra-flow principle, which yielded the highest cooling efficiency, and the aftercooler was usually of the same basic design as the intercooler. Placed as near as possible to the discharge branch of the second-stage cylinder, an efficient aftercooler would reduce the air temperature from 256/290 deg F. to 25/15 deg. F. above the cooling water inlet temperature. As much air-moisture as possible should be removed by the aftercooler, which should also minimize the risk of explosion in the pipework by condensing oil in the air. It was usual to assume that, in a two-stage compressor, 1,400 B.T.U./hr. per B.H.P. would be dissipated by cooling water in the intercooler and cylinder jackets and a further 950 B.T.U./hr. per B.H.P. from an aftercooler, the rise in cooling water temperature being in the region of 15/20 deg F. Recirculation of cooling water via a natural draught cooling tower or mechanical forced draught water coolers made for economy, some 3/5 per cent make-up water only being required. Waste heat recovery from the cooling water could also be employed and the colliery engineer was beginning to demand this.

Controlling the Reciprocating Compressor

Mr. Cooper went on to say that the most usual methods of controlling the reciprocating compressor were : variable speed, inlet control, clearance space control and throttling for partial control, the two most efficient methods being variable speed and inlet control.

Though cost usually prohibited a motor-driven unit being of the variable speed type, with the steam-driven tandem compressor or the steam-engine-driven machine, this could be achieved effectively and cheaply by incorporating an air governor. For air pressures up to the full working pressure the control was in the hands of the centrifugal governor, but when working air pressure was exceeded the air governor took control, varying the speed in proportion to the demand for air.

The intermittent air inlet system, was, according to the author of the paper, the simplest and most efficient method of control under constant speed drive. By means of a suitable relay which came into operation when the air pressure reached a predetermined figure, the air inlet valve was closed, thus stopping the compressor delivering air.

The inherent weakness of this was, however, the tendency for the residual air in the cylinders, passing to and fro, to cause an excessive rise in temperature and an additional unloading device was considered necessary by the author on all mining installations.

Mr. Cooper said that the best criterion of compressor efficiency was that it should deliver the maximum quantity of air to the desired pressure for the minimum expenditure of power. It must do so continuously with the least possible risk of involuntary stoppage through wear, breakage or other constructional weakness, and the real test was the number of cubic feet delivered per minute to a given pressure per brake-horsepower. A recent design of compressor had given a figure of 18.5 h.p. when compressing 100 cu. ft. of air per min. to 100 lb. p.s.i.g. at sea level and an isothermal efficiency of 13.21/18.5, or just over 71 per cent, which was an exceedingly good figure.

For a steam-driven compressor, the overall isothermal efficiency was the ratio of the isothermal horsepower in the air delivered to the indicated horsepower in the steam cylinders. That for an electrically-driven compressor was the ratio of the isothermal horsepower in the air delivered to the electrical horsepower input to the motor. Isothermal horsepower was a theoretical figure representing the least possible power that would be required if the air were compressed under ideal conditions of constant temperature.

The following table shows some typical test results for compressors:

	Powell Duffryn Penalta	*Preston Colliery, Northumberland*	*France Mines de Lens*
Output, cu. ft./min.	6,400	3,300	1,980
Final air pressure, lb./sq. in.g.	75	80	100
Speed, rev./min.	163	239	224
Power input to motor, electrical h.p.	1,141	607	406
Power input to compressor, b.h.p.	1,061	564	373.5
Indicated air horsepower ...	993	—	353
Isothermal horsepower in air delivered	737	393	260
Mechanical Efficiency:			
Motor and compressor combined, i.h.p./e.h.p. ...	87.0%	—	86.9%
Compressor alone, i.h.p./b.h.p.	93.5%	—	94.5%
Isothermal Efficiency:			
Combined plant, isothermal h.p./e.h.p.	64.6%	64.7%	64.0%
Compressor alone, isothermal h.p./b.h.p.	69.6%	69.7%	69.6%
Light Load:			
Motor input, kW.	72.5	30.0	24.0
Percentage full load, kW. ...	8.5%	6.62%	7.9%
Input b.h.p. to compressor	—	—	15.35
Percentage full load, b.h.p.	—	—	4.1%

In conclusion, the speaker added that when colliery engineers had to consider the installation of new compressors the comparative figures of performance should be examined. To allow for variations in barometric pressure, the motor should be 5 per cent greater in brake horsepower than that required at the compressor coupling face, for direct-coupled, motor-driven sets. For vee-belt driven units, the allowance should be 7½/10 per cent above that required at the compressor shaft, depending on the size of plant.

Though the rotary compressor seemed to be favoured because of its higher speed and lower initial costs, the reciprocating compressor could be 7½/10 per cent more efficient and with a life of 20/40 years the vertical reciprocating compressor represented a considerable saving in power over the rotary compressor.

World's Largest Copper Ore Deposit

SINCE the start of large-scale operations at Chuquicamata in 1915, this open-pit mine of the Chile Exploration Company, a subsidiary of The Anaconda Company, has produced more than 6,000,000 tons of copper — accounting for about 55 per cent of Anaconda's total production in recent years. Currently, about 77,000 tons of ore and 48,000 tons of waste are taken daily from the pit, two miles long and half-a-mile wide, with a depth of more than 1,000 ft.

Until recently production had been exclusively from the oxide ores which lie nearest the surface. In the open-pit method of mining, dynamite loaded in churn drill holes is used to blast the ore-laden rock from steps or benches having faces approximately 50 ft. high. Twenty-two such benches have been opened thus far. Sometimes as much as 250,000 tons of ore and waste are blasted at one time, using 44 tons of explosive. Giant shovels, having dippers ranging in size from 4 to 11 cu. yds., load the ore and waste rock into waiting railroad ore cars.

Reduction of the oxide ores to metallic copper is accomplished at the oxide plant. Loaded ore cars from the mine are mechanically dumped into primary crushers. Conveyors carry the material to the secondary crushers. The ore is then leached in vats, having a capacity of 13,000 tons, with a dilute solution of sulphuric acid which dissolves the copper and impurities. The resulting copper-enriched solution is pumped from the leaching vats to the electrolytic tank house, where the copper is removed from the solution and deposited in the form of cathodes, which weigh 150 lb. when removed for melting. After further refining in furnaces, the pure copper is cast in such commercial shapes as wirebars, ingots and cakes.

Production from Deep Levels

While large reserves of oxide ore still remain, it has been evident for many years that the principal copper production in the future would come from the deep-lying sulphide ores. In late 1948 construction was started on a plant for the beneficiation of these ores and their subsequent reduction to metallic copper. Completion of the sulphide plant was timed to treat the increasing amounts of sulphide ore encountered as the pit deepened, and the first blister copper was produced late in 1952.

After the crushing operations, sulphide ore is fed into the concentrator section of the new plant, where it is ground to still finer size in ball and rod mills before passing into the flotation cells. The concentrates produced by flotation are filtered, mixed with lime and other fluxes, and conveyed to the smelter. Molten matte from the reverberatory furnaces, containing about 43 per cent copper, is charged into converters. Blister copper, product of the converters, contains about 99 per cent copper. It is then shipped to the Raritan Copper Works, another Anaconda installation in Perth Amboy, New Jersey, for electrolytic refining.

The combined output of the oxide and sulphide plants, augmented by higher production through improvements now under construction, will yield approximately 300,000 tons of copper a year. At this rated capacity, proven ore reserves at Chuquicamata are sufficient for many years of operation.

MINING MISCELLANY

Important deposits of uranium and thorium are reported to have been discovered in Western Thrace.

★

Establishment of two new radioisotope "tracer" laboratories to aid mineral research at Bureau of Mines installations in Reno, Nev., and Salt Lake City, Utah, has been announced by the U.S. Secretary of the Interior. Radiotracer research now under way at Reno seeks new information that can lead to more efficient methods for extracting and separating the rare earths. At Salt Lake City Bureau, metallurgists will use various irradiated chemicals, compounds and minerals in investigating different metallurgical processes.

★

The High Authority of the six-nation European Coal and Steel Community has asked the Italian Government to clarify a draft Bill, tabled before the Lower House, providing for "capital grants to the coal mines at Sulcis, in Sardinia". The Authority wants to know whether these grants are, in fact, subsidies to allow the Sulcis Collieries to meet foreign competition on the Italian coal market. The majority of Sulcis shares are held by the Italian State.

★

High-tensile steel chain (round link chain) designed for use with certain types of conveyors, coal cutters, coal ploughs and other coal-getting machines, is the subject of a new British Standard, B.S. 2969 : 1958. The publication is based on the relevant N.C.B. specification.

★

The discovery of high-grade kaolin reserves at Kuils River, near Stellenbosch in the Cape Province, South Africa, has opened the way for an important new industry. A company has started operations and the site already cleared is estimated to contain more than 3,000,000 tons of kaolin, which is used in the manufacture of white paper.

★

Preliminary research in the Serra da Moeda region of Minas Gerais has revealed the existence of copper mineral with 4 per cent oxide of copper, as well as zinc and traces of lead. Detailed investigations are now starting. An occurrence of autunite of hydrothermal formation was discovered in the same area in October, 1957.

★

The new electrostatic unit, installed by Brazil's Department of Mineral Production at its Nazarene plant, is now in full operation, processing cassiterite from the Sao Joao del Rei deposits and raising capacity of the plant, which formerly operated exclusively with electro-magnetic apparatus.

★

Brazil exported 120,000 tons of fines from the Itabira iron mines to Czechoslovakia and Poland in 1957 at $10 per ton. Fines were considered as waste products until recently, owing to the absence of any demand from abroad or from local steelmakers.

★

Prospecting in Pernambuco to delimit the area of the Olinda phosphate beds has revealed the existence of deposits containing over 5,000,000 tons of phosphates in the Municipality of Paulista. Owing to topographical and other difficulties, the reserves that can be economically used are not expected to exceed 1,500,000 tons at present. The more easily worked Olinda reserves, estimated at 49,000,000 tons, with a P_2O_5 content ranging from 6 to 22 per cent, are being exploited by a consortium.

★

To meet the needs of the Yugoslav Zenica and Lukavac coking plants, about 1,000,000 tons of coal will be imported this year. Contracts have already been concluded with Soviet and United States exporters. A contract for 600,000 tons to be imported from the Soviet Union was signed direct by Zenica, and that for 360,000 tons from the U.S. by the Jugometal export and import enterprise of Beograd.

★

The British Standards Institution has recently published six revised British standards for wire rope fittings. These standards are : B.S. 461, Bordeaux connections; B.S. 462, Bulldog grips; B.S. 463, Drop forged sockets for wire ropes for engineering purposes; B.S. 464, Thimbles for wire ropes; B.S. 716, Rigging screws and stretching screws for general engineering purposes; and B.S. 1290, Wire rope slings and sling legs.

★

There was a "distinct possibility" that the biggest mechanical processing plant in the Commonwealth, used to treat low-grade ore deposits, would be operating at Iron Knob within eight or ten years, the Premier of South Australia, Sir Thomas Playford recently stated. The Premier said that between 5,000 million and 7,000 million tons of low-grade ore had already been discovered, and he was confident that these deposits were capable of economic use. The process being tested at Iron Knob had been used extensively in the United States, and was now responsible for 33 per cent of that country's enormous steel output. The Iron Knob plant might handle as much as 1,000,000 tons of high-grade blast-furnace ore a year. The Premier said a pipeline would be constructed from Lincoln Cap to Iron Knob to supply water for the project. In addition to the low-grade ore, Mines Department surveys had found a further 30,000,000 tons of high-grade deposits. Some 65,000,000 or 70,000,000 of the 200,000,000 tons of high-grade ore originally found had already been used.

★

A Chinese mountaineering expedition, which has just conquered the peak of the Chingtieh Mountain (5,000 metres) in the province of Kansu, North-West China, reports that geologists accompanying it have found there a deposit of iron ore rich enough to warrant the establishment of a large iron and steel centre in the locality.

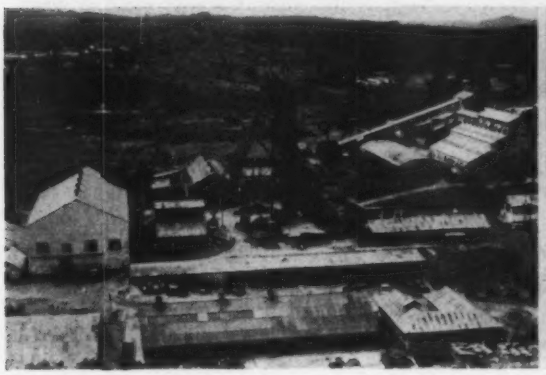
★

A mission from O.E.E.C. will arrive in Ankara this month to study economic conditions in Turkey, with a view to making recommendations for credits to be granted to Turkey by certain O.E.E.C. member countries.

★

The option held by African Metals Corporation to purchase certain base claims in the Transvaal held by Northern Transvaal (Messina) Copper Exploration is being terminated at AMCOR's request

Below, left, is a general view of the workshops area at Amalgamated Banket Areas Ltd., Ghana. The ore treatment plant is on the right of the picture. Below, right, a part of the reduction plant slimes dam and mill water dam are shown. Tailings amount to about 60,000 tons per month. The mill dam is supplied with water from underground sources pumped by A V Shaft



on July 31. The original option was for five years as from February 1, 1956. Prospecting work has been carried on by AMCOR since the beginning of the option period. The board of Northern Transvaal states that it intends to obtain records of prospecting results and means will then be considered of having the claims further examined if such a course appears advisable.

★

On page 195 of *The Mining Journal Annual Review*, 1958, it was stated that gold mining in New Zealand had decreased to two bucket dredges, those of the Arahura and Kanieri companies. There are, in fact, three dredges operating in New Zealand, the third being that of Clutha River Gold Dredging Ltd., which is also active. From May 2 to May 30, 1958, the Clutha River dredge worked 516 hours and recovered 337 oz. of gold.

PERSONAL

We regret to announce the death of Mr. Jack Olding, president and founder of Jack Olding and Co. Ltd.

★

Sir Archibald Finlayson Forbes, G.B.E., has been elected a member of the board of directors of the English Electric Co. Ltd.

★

On May 31, Mr. L. Clements, export manager of Ferodo Ltd., retired after 39 years' service with the company. He will be succeeded by Mr. J. C. T. Fell.

★

Mr. J. W. Bennett, lately president of Atomic Energy of Canada has been appointed general manager of the Canadian British Aluminium Co. in succession to Mr. P. T. Ensor, who is returning to the U.K. in July to take up other duties with the British Aluminium Co.

★

The death has occurred of Mr. George Alfred Sydney Harvey, president of G. A. Harvey and Co. (London) Ltd. Mr. Harvey entered the business at the age of 17. On the death of his father in 1937 he was appointed chairman and managing director, a post which he occupied until his retirement from active participation in 1956.

★

Mr. E. J. Waddington has resigned from the boards of Vickers-Armstrongs (Aircraft) Ltd., Vickers-Armstrongs (Engineers) Ltd., Vickers-Armstrongs (Shipbuilders) Ltd., and Vickers-Armstrongs (Tractors) Ltd. Mr. J. H. Robbie, a director of Vickers-Armstrongs (Engineers) Ltd., has been appointed an additional member of the board of directors of Vickers-Armstrongs (Aircraft) Ltd., Vickers-Armstrongs (Shipbuilders) Ltd., and Vickers-Armstrongs (Tractors) Ltd. Mr. Robbie has also been appointed controller of finance of Vickers Ltd. and of Vickers-Armstrongs Ltd.

COMPANY EVENTS

The Goodyear Tyre and Rubber Co. (Great Britain) Ltd. has formed a new division which will be known as the Engineering Products Division. It will take over the further development, manufacture and testing of Goodyear Industrial disc brakes and Goodyear Ausco double-disc brakes, which have hitherto been handled by the Aviation Products Division. A further function of the new division will be the handling of contract work for which comprehensive precision machining, fabrication, assembly and testing facilities are provided. This is a service provided for manufacturers who require additional production in the light engineering category.

★

The London office of the Climax Rock Drill and Engineering Works Ltd. has been changed from 4 Broad Street Place, E.C.2, to 44 Brook Street, W.1. The new telephone number is Hyde Park 9444 and the Telex number London 22105. The company's stores and service depot is situated at 50 and 52 Brunel Road, East Acton, London, W.3. Telephone: Shepherds Bush 1136-7.

★

A new company, Dowty Mining Developments Ltd., has been added to the Dowty Group of companies. Announcing this in Cheltenham, Sir George Dowty said that mining was daily becoming a more highly technical and scientific subject. The Dowty Group's aim is to provide the most advanced thought and planning for mining development. The new company will be based at Ashchurch, near Tewkesbury, which is also the home of Dowty Mining Equipment Ltd. The board of directors comprises Sir George Dowty, Mr. A. W. Mills, Mr. H. Langford-Holt, and Mr. C. Treharne Jones.

★

The Holman Group, which is already making important sales of pneumatic equipment to the Polish mining and civil engineering industries, is exhibiting at this year's International Fair at Poznan, June 9-22. This will be the fourth year running that the group has exhibited at Poznan. Perhaps the most important exhibit will be the Holman Dryductor drill, which is in great demand in those countries where health legislation requires dust-free drilling. In Central and Eastern Europe there is considerable interest in the Dryductor drill.

★

With the increasing demand in the Canadian market for the products of the Hunslet Engine Co. Ltd., Leeds, a new company, Hunslet Locomotives Canada Ltd., has recently been formed with registered offices at Haileybury, Ontario. It will improve the after-sales service facilities, which have hitherto been provided by the Hunslet Engine Co. Ltd. from the United Kingdom in conjunction with their Canadian representation, Lecky Machinery Ltd. in Eastern Canada and Gordon Russell Ltd. in Western Canada. At present, Hunslet have their locomotives operating in most of the Canadian mining districts and are carrying substantial stocks of spare parts in their Canadian warehouse.

★

Mr. H. E. Humphreys, jun., chairman of United States Rubber Co., whose company operations cover fifty-six factories employing 65,000 people, made a special visit to Britain to take the chair at the annual general meeting of the North British Rubber Col., held on May 26. He was accompanied on this visit by Mr. L. C. Boos, vice-president of U.S. Rubber Co., to which the 100-year-old Scottish firm is affiliated. Since Mr. Humphreys' last visit to Scotland there has been considerable progress in the company's modernization plans. The modernization and doubling of the capacity of the tyre factory scheduled for gradual implementation and completion in 1961 was stepped up. All new equipment has been installed and the original project completed within the past year. Steelwork of a new mechanical factory has been erected and building is proceeding. Production will commence early in 1959. During the past year new products have been introduced, particularly in the field of plastics. At the Dumfries factory, a two-year development of P.V.C. conveyor belting in accordance with the N.C.B. specifications for underground working has been successfully completed. It was revealed only a few days ago that the first shipments of P.V.C. conveyor belting had left for both the United States and Turkey. This new type of anti-static flame resistant plastic belting is a British development and promises to be a worthwhile addition to exports. Plans are being laid for still further expansion.

★

The next British Trade Fair in the programme of The Federation of British Industries will be held in Lisbon from May 29 to June 14, 1959.

AGENCIES WANTED

Mr. Warren M. Shwayder, president of the Shwayder Co., 684 Woodbridge Avenue, Detroit 26, Michigan, is interested in quotations from U.K. suppliers for manganese dioxide of a specified quality, synthetic scheelite, aluminium powder of metallurgical grade, ilmenite of high purity, and chromite of metallurgical grade. B.O.T. Ref. ESB/12919/58. Telephone inquiries to Chancery 4411, extension 776 or 866.

CONTRACTS AND TENDERS

Spain

The following future procurement for Spain has been announced by the International Co-operation Administration (I.C.A.): Copper ore and concentrates (PA 52-6503-99-L1-8211). Contract period, 5/5/58-31/1/59. Terminal delivery date, 31/5/59. Value, $950,000. B.O.T. Ref. ESB/13666/58/ICA. Telephone inquiries to Chancery 4411, extension 354.

★

Mirrlees, Bickerton and Day Ltd., of Stockport (a member of the Hawker Siddeley Group), have obtained a further order for their KVSS16 industrial diesel engine. The order has been placed by the Ashanti Goldfields Corporation Ltd., and is for a type KVSS16 developing 4,128 b.h.p. at 428 r.p.m., which will be direct coupled to a Brush alternator giving 2,950 kW. power output.

★

Hudswell, Clarke and Co. Ltd. have received from the Crown Agents for Oversea Governments and Administrations an extension to their contract for a further eight main-line diesel hydraulic locomotives for the Sierra Leone Government Railway. This addition brings the number of locomotives the company are now building for this railway up to sixteen and the total value of the contract is approximately £500,000. The locomotives are being fitted with a "Paxman" Hi-Dyne (constant h.p.) diesel engine, together with a Vulcan Sinclair dual fluidrive transmission unit. This type of locomotive has been developed by the company over the past four years under the name of "Enterprise" and is known as the "Enterprise" series, according to the power ranges required. The order has resulted from the most successful performance of the prototype locomotive.

Machinery and Equipment

Heavy Duty Blade Mill for West Africa

The largest blade mill ever made at the Erith works of the General Electric Co. Ltd. is now operating in the concentrating plant of the African Manganese Co. Ltd. in Nsuta, Ghana. Its function is to disintegrate the clay in the crushed ore so that it can be washed out prior to the concentration of the manganese mineral. The mill has a capacity of 400 tons of minus 5 in. ore per hour.

The mill consists essentially of an 8 ft. dia. rotating cylinder, 24 ft. long, supported on eight rollers. Ore enters through a feed inlet at one end with about an equal weight of water. Rows of blades churn it up in its passage through the mill, so that it is discharged at the other end with all the clay disintegrated and the mineral scrubbed clean.

The shell is constructed of 1 in. mild steel plate in two sections, each 12 ft. long, to facilitate transport to site. The two halves are bolted together at spigoted flanges, four fitted bolts being provided on the principal axis for accurate location. Liners of chromium steel, 2 in. thick, protect the interior, including both ends, from wear. The longitudinal liners are cast with rows of blades set at an angle to the axis. The effect of the blades is to tumble the ore in the lower half of the shell and at the same time move it forward towards the discharge end.

Some of the blades, at irregular intervals, are set at the reverse angle in order to throw the ore back and produce a churning action. In this way the clay is broken up and scrubbed off the surface of the mineral during its passage through the mill.

At the discharge end are radial scoops which lift the disintegrated ore pulp on to a heavy central deflector of manganese steel. Thence the pulp is directed into a discharge trommel with circumferential blades for moving it forward out of the mill.

Round the shell are two roller paths of cast steel 4 in. thick, with faces 20 in. wide. The mill is driven by a spur gear round the shell with a face width of 12 in. The total weight of the blade mill is 80 tons, but it was so designed that, for ease of transport overseas, no single part weighs more than 10 tons.

A RANGE OF PUMPS

It is claimed that a greater versatility has now been added to the Plessey range of hydraulic equipment with the introduction, at the recent Mechanical Handling Exhibition, of two new ranges of pumps, known as the Beta and Gamma series, the pumps have been designed so that an extremely close graduation of power output, high volumetric efficiency and high-pressure ratings can be obtained. They are intended to supplement the existing series of pumps, allied to the range of Plessey hydraulic control gear applied to earth-moving and mechanical handling applications.

The Beta series, square in shape, and covering the smaller capacities from 0.27 to 4.2 gals. per 1,000 revs, is designed to provide a range of rugged and compact units. The Gamma series, oval in appearance, covers the larger outputs from 4.3 to 46 gals. per 1,000 revs. In both designs the gears inside the casings can be varied to give alternative performance depending on requirements.

A NEW RESPIRATOR

One of the main features of the Dustfoe 66, a new dust respirator manufactured by Mine Safety Appliances Ltd., is a new facepiece cushion which is claimed to provide a better, more automatic fit, giving greater wearing comfort. The cushion is made of neoprene sponge. If any slight adjustment is required, the aluminium facepiece is sufficiently pliable to be moulded into shape.

The respirator has newly designed exhalation valves which are larger than on previous models. The manufacturers state that breathing resistance has been reduced to a minimum by the new valves, held in position by spring-loaded rivets to obviate accidental removal.

ON THE JOB

It has been reported in *Rhokana Review*, March, 1958, that on one Copperbelt property failure of pump impellers caused frequent replacements. At very low cost, a mechanical foreman moulded impellers from liquid glass and placed them in various parts of the plant pumping circuit. To date, the glass impellers are serving "extremely well".

Above : The blade mill for scrubbing and cleaning manganese ore

Left : Interior of the blade mill showing liners and blades

Metals and Minerals

Development of Australia's Bauxite Resources

Substantial progress in investigation and planning for the development of the bauxite deposits at Weipa, on the west coast of Cape York Peninsula, was reported by Mr. L. B. Robinson at the annual meeting of the Consolidated Zinc Corporation Ltd. This huge task is being undertaken by the Commonwealth Aluminium Corporation Pty. Ltd., in which the British Aluminium Co. Ltd. is associated with Consolidated Zinc.

In December, a comprehensive agreement was negotiated with the State of Queensland providing for the development of the field. The term of the agreement is 84 years was a right of extension for a further 21 years. A large initial lease area of up to 2,770 sq. miles is provided for in the agreement, although this is to be scaled down progressively to 1,000 sq. miles over the next 20 years. It is considered that the latter area will be sufficient to cover all bauxite of commercial grade. In addition to the usual provisions governing the development of the deposits, rents, royalties and other matters, the agreement represents to a very high degree an attempt to foresee at this early stage the many problems that will be associated with harbour construction, water supplies, community settlement and local government in the area. A feature of the agreement is Commonwealth Aluminium's undertaking to establish an alumina plant in Queensland as soon as practicable after the company has completed its investigations.

Much of the year's work has been directed towards further testing of the bauxite deposits and towards establishing that the industry's requirements can be economically met. In the Weipa and nearby areas more than 300 sq. miles have so far been investigated, of which 160 sq. miles have been shown to bear bauxite of commercial interest. Much work has also been carried out on chemical testing, investigation of water and power resources and other elements in a preliminary economic assessment of alumina production.

Mr. Robinson recalled his reference last year to a joint venture by the Commonwealth Government and the British Aluminium Co., which had indicated certain deposits of bauxite on the north coast of Australia west of the Gulf of Carpentaria. This year he was able to tell shareholders that these deposits—in the Gove Peninsula—had been the subject of successful negotiations with the Commonwealth Government, as a result of which they will be consolidated with the other interests of Commonwealth Aluminium and investigated jointly with the Weipa deposits.

Earlier in the year the Commonwealth Government had accepted in principle an offer made for the purchase of its interest in the New Guinea Resources Prospecting Co., through which, since 1950, the Commonwealth and British Aluminium have been investigating the hydro-electric potential of water resources in Papua, New Guinea. These investigations, particularly of the resources in the Purari River, will now be taken to a more conclusive stage. They are essentially related to the question of aluminium metal production, a matter which Commonwealth Aluminium is pursuing as its principal objective.

Work on several possible sources of power supplies will constitute an important part of operations in the immediate future. The outcome of investigations into Queensland coal resources for aluminium smelting could influence the site chosen for the alumina plant, as well as the fuel to be used for that plant. In this connection a five-year option has been secured over the Blair Athol coalfield in the central coastal region of Queensland. This coalfield has a very large deposit of black coal which could be worked by opencast methods. Reserves have been estimated at approximately 200,000,000 tons.

CONTROL OF INDIAN MANGANESE EXPORTS

The Government of India has decided that for the period July, 1958, to June, 1959, the export of manganese ore should be regulated.

According to a Press note issued last week in New Delhi, the regulations will be as follows:

The established shippers, the mine-owner exporters and the State Trading Corporation will be given an allotment of quota for a quantity equal to the quota for 1957-58.

Firms and parties whose individual allotments are small are advised to form co-operatives or limited companies. In order to encourage them to do so, it has been decided that, where the total of the individual allotments of the firm and parties joining a particular co-operative or company aggregates 20,000 tons, a bonus allotment of 10 per cent of the total will be given to the company or co-operative concerned.

Quota-holders with past reference during the period 1957-58 in more than one sector will be given more movement facilities *pro rata* to their past performance on each sector.

In the event of the total of movement quotas in any particular sector falling short of the availability of wagons, preference will be given to requests from parties having firm sale contracts registered in advance with the Joint Chief Controller of Exports concerned.

Exports of low-grade manganese ore from the Garividi, Skrikakulam, Bobilli, Salur and Raigada areas will be licensed freely on production of foreign sales contracts as hitherto, as will those of manganese ore analyzing 40 per cent and lower from the loading stations of Dohad, Shivrajpur, Nathpuri and Pani in the Panchmahal district of Bombay and Rajasthan States. Performance on these sectors will not qualify for movement facilities on sectors on which the railway capacity available is already fully extended.

Those who are able to secure bulk business in excess of their quotas, or who are able to negotiate sales on long-term business for deliveries beyond June, 1959, are advised to approach the Chief Controller of Imports and Exports in order to work out satisfactory arrangements, so that in anticipation of the export policy for succeeding years, advantage may be taken of such business opportunities.

In announcing these regulations, the Government of India said that it had been keeping under constant review the working of the policy announced on May 29, 1957, and on June 26, 1957, for the export of manganese ore during the period July, 1957, to June, 1958.

After careful consideration of suggestions received from different commercial organizations, the Government concluded that the long-term interest of Indian manganese ore would be better served if the export policy were to discourage fragmentation of quotas and encourage bulk contracting, at the same time maintaining continuity in the export arrangements as far as practicable.

Trade reports in London that India had relaxed the export duty on manganese ore have been denied in New Delhi. No action, it was officially stated, has been taken in this regard since February this year, when the Government announced the abolition of export duty on ores with a manganese content below 42 per cent and a duty reduction to 10 rupees per ton on ores with a manganese content of 42 per cent and higher, but not exceeding 44 per cent.

MARY KATHLEEN STARTS MILLING URANIUM

The Rio Tinto Co. Ltd. have announced that uranium-bearing ore was fed into the mill at Mary Kathleen, Queensland, for the first time on June 3. This is the first stage in the start up of the whole plant. It will be some time before uranium oxide, which is being manufactured for the U.K. Atomic Energy Authority, is finally produced. The power station has been working for several months and recently the sulphuric acid plant was put into operation.

Only 27 months elapsed between preparatory site clearing and the completion of a fine modern township of 221 houses with all amenities, a large dam, and the mill and associated plant. In addition, considerable development of the mine itself has been carried out with large quantities of ore stockpiled.

TITANIUM PRICES CUT

Imperial Chemical Industries' Metals Division has announced substantial reductions in titanium prices. Wrought titanium and alloy products delivered after July 1 will be cheaper by between 5 per cent and 20 per cent owing to "rationalization of the price structure". The effect will be to reduce the price of a typical titanium rod from 95s. to 75s. per lb., while sheet will cost £6 instead of £6 10s.

COPPER · TIN · LEAD · ZINC

(From Our London Metal Exchange Correspondent)

During last week, prices of copper and zinc have shown an appreciable rise, whilst that for tin has been steady and that for lead has fallen, and it is extremely difficult to make a general remark covering present trends. The majority opinion is that the advance in copper has been sufficiently rapid to make a short downward movement likely in the near future; that tin will remain at the support level; that lead will drift lower, and that zinc will remain steady.

DUTY COULD DEPRESS U.S. COPPER PRICE

Apart from a slight easiness at the end of last week, the copper price has advanced rapidly in London and has been followed by advances in Belgium and by the customs smelters in America to 24½ c. per lb. Demand is a little better in America but in Europe consumers are not rushing into large forward commitments and the French situation is an additional factor calling for caution.

In America, customs smelters report very much better business, and there are signs that a minority of consumers have placed small orders for restocking purposes. But against this, sales by primary producers do not show very much improvement and, as more than one person has pointed out, the slack summer season is almost upon us. It is felt that with the customs smelter price and producer price now so close together, more business will be done by the latter group, more especially as the offerings of scrap are not abundant. There is discussion as to the possible effects of the introduction of a 1.7 c. per lb. duty on July 1, as this must have some effect on the span between the sterling and dollar quotations. The majority feel that it is the latter which will suffer, although the argument is heard that primary producers in America would probably sell just as much copper if they raise their price by 1½ c. as they do today.

Turnovers on the London market have increased with the rising price and activity has been more widespread than of late. Stocks at the beginning of the week showed a small drop but the contango has tended to widen.

MORE BUFFER STOCK SUPPORT

The tin market has been bumping against the support level with fair-sized offerings of cash metal, and stocks at the beginning of the week showed a rise of 411 tons, most of which was probably absorbed by the buffer stock. Although rumblings of discontent continue to be heard in tin-producing countries, it was heartening to receive the news that the Thailand Government have decided that their country should remain in the International Tin Council.

Shipments of tin from Singapore in May were slightly higher than those in April at 691 tons, although this was a little more than one-third of the tonnage shipped in May of last year. Shipments from Penang were also slightly higher than those of April at 3,390 tons, which is some 1,000 tons below the shipments for May of last year. On Thursday morning the Eastern price was equivalent to £749½ per ton c.i.f. Europe.

LEAD STOCKPILING ENDS

The lead market has continued weak, with a reduction of ½ c. per lb. taking place in America, bringing the price there to 11 c. delivered New York and a number of people are still talking the price lower. The contango has been maintained in spite of the dock strike in London which is causing a certain amount of dislocation in deliveries, and should it continue for any length of time a backwardation may be re-established for a short period. In April, the O.E.E.C. countries produced 48,612 tonnes as compared with 51,400 tonnes in March, whilst a comparison with the previous year shows an increase of about 2 per cent.

The American stockpile authorities apparently took in about 9,000 tons of lead against their last tender, which is about double the normal intake over the last 12 months. With this, stockpiling of lead ceases and as that of zinc has already stopped, attention is focused even more upon what action President Eisenhower will take on the recommendations of the Tariff Commission and the arguments now taking place on the government's proposed support policy.

CUTBACK NEWS HELPS ZINC

The zinc market has shown more life and the upward movement in prices was sparked off by the announcement of the New Jersey Zinc Co. that they were reducing their output by a further 20 per cent at two of their smelters, making a total cutback of 50 per cent since the middle of April. Demand has been a little better in some sections of the trade but that from the motor industry in the States for the higher grades remains disappointing.

★

Mr. L. B. Robinson, in his chairman's statement to shareholders of New Broken Hill Consolidated Ltd., underlined the uneconomic level of the prices for lead and zinc and expressed the opinion that a combined price of £175 per ton would eventually prove to be acceptable to both producers and consumers.

Closing prices are as follows:

	May 29		June 5	
	Buyers	*Sellers*	*Buyers*	*Sellers*
COPPER				
Cash	£181½	£181¾	£183½	£183¾
Three months	£183¾	£184	£185½	£186
Settlement	£181¾		£183½	
Week's turnover	6,500 tons		8,450 tons	
LEAD				
Current ½ month	£70½	£71	£71½	£71¾
Three months	£71¼	£71½	£71¼	£72
Week's turnover	4,200 tons		3,025 tons	
TIN				
Cash	£730	£730½	£730	£730½
Three months	£733	£733½	£734½	£735
Settlement	£730½		£730½	
Week's turnover	1020 tons		1,200 tons	
ZINC				
Current ½ month	£61½	£61¾	£62¼	£62½
Three months	£62	£62¼	£62¼	£63
Week's turnover	4,650 tons		4,350 tons	

LONDON METAL AND ORE PRICES, JUNE 5, 1958

METAL PRICES

Aluminium, 99.5%. £180 per ton
Antimony—
English (99%) delivered, 10 cwt. and over £190 per ton
Crude (70%) £190 per ton
Ore (60%) basis 19s. 6d./20s. 6d. nom. per unit, c.i.f.

Arsenic, £400 per ton
Bismuth (min. 1 ton lots) 16s. lb. nom.
Cadmium 10s. 0d. lb.
Cerium (99% net), £16 0s lb. delivered U.K.
Chromium, Cr. 99% 7s. 2d. lb.
Cobalt, 16s. lb.
Germanium, 99.99%, Ge. kilo lots 2s. 8d. per gram
Gold, 249s. 4½d.
Iridium, £22 oz. nom.
Lanthanum (98/99%) 15s. per gram.
Manganese Metal (96% - 98%) £310
Magnesium, 2s. 5½d. lb.
Nickel, 99.5% (home trade) £600 per ton
Osmium, £18/£20 oz.
Osmiridium, nom.
Palladium, £6 5s./£6 15s.
Platinum U.K. and Empire Refined £24/£25 oz.
Imported £22/£22 10s.
Quicksilver, £76 10s. ex-warehouse nom.
Rhodium, £40/£42 oz.
Ruthenium, £15/£17 oz. nom.
Selenium, 50s. 0d. per lb.
Silver, 75½d. f. oz. spot and 75½d. f'd.
Tellurium, 14s./15s. lb.

ORES AND OXIDES

Bismuth	60% 8s. 6d. lb. c.i.f. 18/20% 1s. 3d. lb. c.i.f.
Chrome Ore— (Fe ratio 3:1)	
Rhodesian Metallurgical (semifriable) 48%	£16 5s. 0d. per ton c.i.f.
" Hard Lumpy 45%	£16 0s. 0d. per ton c.i.f.
" Refractory 40%	£11 10s. 0d. per ton c.i.f.
" Smalls 44%	£14 10s. 0d. per ton c.i.f.
Baluchistan 48%	£11 15s. 0d. per ton f.o.b.
Columbite ,65% combined oxides, high grade	nom.
Fluorspar—	
Acid Grade, Flotated Material	£22 13s. 3d. per ton ex. works
Metallurgical (75/80% CaF_2)	156s. 0d. ex works
Lithium Ore—	
Petalite min. 3½% Li_2O	47s. 6d./52s. 6d. per unit f.o.b. Beira
Lepidolite min. 3½% Li_2O	47s. 6d./52s. 6d. per unit f.o.b. Beira
Amblygonite basis 7% Li_2O	£26 5s. per ton f.o.b. Beira
Magnesite, ground calcined	£28 0s./£30 0s. d/d
Magnesite Raw (ground)	£21 0s./£22 0s. d/d
Manganese Ore Indian—	
Europe (46% - 48%) basis 67s. 6d. freight	nom.
Manganese Ore (43% - 45%)	nom.
Manganese Ore (38% - 40%)	nom.
Molybdenite (85% basis)	8s. 5d. per lb. (f.o.b.)
Titanium Ore—	
Rutile 95/97% TiO_2 (prompt delivery)	£37/£38 per ton c.i.f. Aust'n
Ilmenite 52/54% TiO_2	£11 10s. per ton c.i.f. Malayan
Wolfram and Scheelite (65%)	76s. 0d./79s. 0d. per unit c.i.f.
Vanadium—	
Fused oxide 90 - 93% V_2O_5	£10 per unit c.i.f.
Zircon Sand (Australian) (65 - 66% ZrO_2)	£14 5s. per ton c.i.f

Mining Finance

Dillon Read Takes A Hand

Speaking in Virginia (O.F.S.) on Tuesday, Mr. C. W. Engelhard, chairman of Rand Mines and president of Engelhard Industries, disclosed that the American banking house of Dillon Read and Co. is forming a $30,000,000 Trust (to be known as the American-South African Investment Trust), to acquire a stake in the South African gold mining industry. Although the formation of the trust has been rumoured for some weeks, the fact that it is to be registered in the Union is a somewhat unexpected step, taken, it must be supposed, in order to avoid the 15 per cent withholding tax imposed on dividends by the U.S. Treasury.

In view of recent conflicting statements on the Union's policy towards investment from overseas, one main uncertainty surrounding the various recent rumours has been the attitude of the South African Government to the holding of such a large slice of the industry by a single U.S. organization. It would now appear that some of the more alarming possibilities, to which we referred here last week, are not to be taken too seriously, for Mr. Engelhard was quite sure, following discussions with various members of the Government, that their general attitude was one of welcome for American capital at all times.

Given the fact that Wall Street deems the moment propitious for interesting the private American investor in Kaffirs, it is natural enough that the chairman of the Trust (Mr. Engelhard) should be the head of one of the two American groups which has been most closely associated with South African mining in the post-war years. Mr. Engelhard, aside from being a leading international figure in the platinum industry, is chairman of Rand Mines, and his organization holds the principle interest in the consortium formed a year ago to acquire the preference shareholding of Central Mining Finance. The link between Engelhard Industries and the South African gold industry is, of course, further strengthened by the fact that Mr. G. V. R. Richdale, who has for some years been Mr. Engelhard's associate, was formerly a distinguished senior member of the Central Mining organization.

The other American organization which has been identified with South Africa's gold industries is Kennecott Corporation, which holds a substantial interest in Merriespruit and Virginia mines. It may be no more than a coincidence that Mr. Engelhard's announcement concerning the formation of the Trust should have been made at Virginia, the township which serves these mines.

What may prove to be a major problem arising from this new venture is how the Trust is to acquire up to $30,000,000 of Kaffir shares on a market where existing holdings have of late been fairly tightly held, and in which, since the war, dealers have seldom carried much stock. It would obviously be most regrettable if competitive bidding resulted in an artificial boom. Fortunately there is every reason to think that the Anglo American Corporation, and very possibly some of the other groups as well who must all welcome this rising interest among American investors, will do their best to relieve any pressure on the market by releasing stock against buying orders from this source.

LONDON MARKET HIGHLIGHTS

At the beginning of last week South African Gold shares had a very tired appearance. For one thing, the end of a three-week Stock Exchange Account was approaching and after the boomlet conditions that had obtained earlier, dribs and drabs of profit-taking were sufficient, in the lack of further buying interest, to depress quotations all round. At the same time, a "fairly substantial" selling order was believed to be about and this did not help the shares of some of the older mines. In the circumstances, the excellent May returns which contained a whole crop of higher profit figures were largely ignored.

Later, the market picture altered completely following official confirmation that a $30,000,000 trust was being formed with the object of interesting U.S. investors in gold shares. The trust was being formed by the U.S. banking house of Dillon Read, and Mr. Charles Engelhard, who was to be chairman of the new company operating the venture, stated that the American public had great confidence in the South African gold mining industry.

This was just the tonic that the gold share market had been waiting for and prices immediately responded. Finance shares were particularly favoured and among them Anglo American (137s. 6d.) and Central Mining (61s. 6d.) soon rose 2s. 6d.

Shares of the mines themselves followed suit to a certain degree, particularly those that had been depressed earlier, but there was no big expansion in business. One outstanding spot was in Riebeeck, which at one time spurted to 13s. on the encouraging borehole result. Middle Wits (13s.) and "Geoffries" (3s. 3d.) hardened in sympathy.

Otherwise, in a week of mixed movements, "Writs" moved up to their best this year of 48s. 6d. on the confirmation of hopes of a higher interim. Dividend hopes, coupled with the firmness of copper, also stimulated Selection Trust (76s. 3d.). Elsewhere, a minor feature developed in National Mining; following the bid of 1s. 6d. and the Board's opinion that this represented less than the potential value of the company, the shares advanced from 1s. to 1s. 9d. The board, who strongly advise shareholders against accepting the offer, will issue a detailed circular shortly.

As suggested here last week, an improvement in the copper price, together with a firm Wall Street, was quickly reflected in copper shares. While the U.S. customs smelter quotation rose ¼ c. to 24½ c. per lb. and London Metal Exchange copper reached its best since last December, Continental and local buyers sent copper producers' shares advancing on a broad front. Substantial gains left many shares at their highest this year, and among them rises of several shillings were registered in Nchanga (202s. 6d.), "Rhoanglo" (70s.) and Messina (84s. 4½d.). Growing investment inquiries raised M.T.D. Mangula to 6s. 4½d., while Rio Tinto (60s. 7½d.) were additionally boosted by news that their Mary Kathleen uranium mine had started production.

Other Base Metals remained dull for the most part. In Tins, Ayer Hitam (22s. 9d.) and Killinghall (6s. 6d.) lost ground, while Rahman were unmoved following the official denial that the mine had closed down. Beralt (24s. 9d.) were not helped by the fresh setback in the wolfram price.

As far as Lead-zincs were concerned, Consolidated Zinc and New Broken Hill were depressed by their chairman's remarks on the adverse effect of current metal prices on company earnings. Both shares later rallied, however, on some bear-closing coupled with a rather vague feeling that if copper had turned the corner at last, perhaps lead and zinc would follow suit in due course.

MAKING THE RECESSION WORK FOR YOU

The statement by the chairman of the Consolidated Zinc Corporation, Mr. L. B. Robinson, on the 1957 accounts provides still further evidence of this company's far-sighted and dynamic policy.

Prevailing market conditions for lead and zinc have made it essential that production should be slowed down during the current year. Arrangements were announced last year by which total working time on the Broken Hill field was reduced by 10 per cent. More interesting is Mr. L. B. Robinson's announcement that a large group of men at the Zinc Corporation mine has been transferred from ore extraction to development, which, of necessity, will be far ahead of immediate production requirements. This is sound policy inasmuch as it will enable the Corporation to maintain the excellent organization of staff and employees built up over the past few years, in addition to placing the Corporation in a strong competitive position when normal working can be resumed. On the debit side, it does, of course, mean an additional charge against current production at a time when it can be ill-afforded.

The growth of the Corporation outside the lead/zinc mining industry is going on apace. On the smelting side, the Imperial Smelting Co. has taken advantage of the

lull in demand to dispense with obsolescent horizontal distillation furnaces, with more modern equipment now possible because of the expansion of capacity at the vertical retort plant, and particularly the new process described in *The Mining Journal* of August 9 and 16, 1957—another long-sighted move—while a 75 per cent interest has been taken in Pure Chemicals, a company producing a range of fine chemicals including P.V.C. stabilizers. Vertical integration has been carried further by the purchase of an interest in Wolverhampton Die Casting, Imperial Smelting's largest customer for its zinc alloy production. Over and above this, the huge bauxite discoveries in Cape York (referred to in detail on page 666) promise in time to add yet another major division to Consolidated Zinc's already diverse activities.

The redeployment of staff referred to above was also carried out at New Broken Hill. At this mine, efficiency, as measured by the various tons per man/shift indices, increased considerably during the year, and this, coupled with the extremely advanced state of development which will exist when normal mining resumes, means that the mine's cost structure may well show a sharp reduction when post-recession operations are compared with those of a year or so ago.

ANGLO'S CONFIDENT PROGRESS

The Anglo American Corporation's stake in mining in Southern Africa is such that its annual report is of value not merely as a record of Anglo's own progress, but as a review of the industry as a whole. This is all the more true of this year's typically monumental and beautifully produced volume now that the Corporation's coal interests have been lifted, by last year's take-over of African and European, to a level comparable with its investments in gold and uranium, in diamonds and in copper.

A measure of the proportion of the Union's gold and uranium industry administered by Anglo is given by the table below. This proportion will, of course, tend to increase, since of the 17 mines which have begun operations since the war, seven are under the Corporation's aegis, including six mines on the fast expanding O.F.S. field.

	Industry	*Anglo American*	%
Tons milled (000) ...	66,114	15,518	23
Grade — dwt. per ton ...	5.000	5.816	—
Cost per ton ...	45s. 4d.	44s. 3d.	—
Working Profit:			
Gold (£000) ...	57,833	22,081	38
Uranium (£000)	33,308	6,925	21
Total (£000) ...	91,141	29,006	32
Uranium:			
Tons treated (000) ...	21,624	7,816	36
Yield — lb. per ton treated	.512	.356	70

An interesting point arising from the table is that, although such a large proportion of the mines under Anglo's administration are, as yet, in their early stages, with the necessary concomitant of high costs, the overall cost picture of the Corporation's mines compares very favourably with that for the industry as a whole. The reason must be sought in the fact that the tonnage throughput of the older, low-cost producers is still sufficient to outweigh that of the younger mines.

The accounts show that income from investments continued to rise, and, in fact, this rise was more than sufficient to counterbalance a £600,000 fall under the miscellaneous head. Thus, as had been anticipated, falling income from copper has been absorbed by the upward trend of gold and uranium earnings. Whether this high level can be maintained in the current year must remain a matter of conjecture, in view of the distinct flattening out of gold dividends and the further deterioration of copper earnings. Indications are, however, that the group remains optimistic on this point. Overall income on consolidated account was £8,411,380 compared with £8,297,640 in 1956 and gross profit was up from £5,089,942 to £5,713,733.

On the appropriation side of the accounts, the cost of dividends declared during the year was increased by more than £1,000,000, partly due to the raising of the distribution from 7s. to 8s. per share, and partly to the increase in issued capital as a result of the African and European operation. On the other hand, no revenue accrued in 1957 from the A. and E. shares thereby acquired, although this item will presumably provide an additional £300,000 to £400,000 of revenue in the current year's accounts.

The provision against loans this year was £150,000 (against £450,000), making the total reserve £1,100,000, most of which is presumably earmarked against a possible closure at Loraine. There was a small decrease in the tax provision, but otherwise appropriations were unchanged, leaving £394,884 to be carried forward against £53,041 brought in.

The chairman's address to shareholders at the annual meeting (this year on June 27) is an event which is always awaited with more than usual interest alike in mining and financial circles. This year the occasion has an added poignancy as it is the first occasion on which Mr. Harry Oppenheimer meets the shareholders as chairman of the Corporation built up by his distinguished father, and led so ably by him until his death last November. His promises to be a notable succession.

ANOTHER O.T.C. "VICTIM"

We have before now had cause to comment on the legislative anomaly by which holding companies find themselves worse off as a result of O.T.C. tax concessions accorded to the companies in which they hold an interest. This week's report from British Tin Investment points once more to the absurdity of the present situation. The new flat rate profits tax will go some way towards alleviating the position in this particular case, but it will certainly not fully compensate the company. Although the report has been delayed by three months in order to clarify British Tin's tax position, it remains extremely obscure, and the only certain thing is that by declaring a final dividend of 10 per cent for 1957, to be paid at the time when an interim for 1958 would normally have been due, the Corporation has managed to pay shareholders more than they could otherwise have received.

This being the case, the only figure from the accounts with real meaning is the Corporation's net revenue for the year, which was £15,000 lower at £337,669. This slight fall is not, as might be thought, due to a decline in dividend income from the hard-pressed base metal producers (in fact, this was fractionally higher) but to increased administration charges, and to a higher taxation appropriation, calculated on the most pessimistic basis. The chairman warns, however, that because of a change in accounting procedure, next years' accounts may well show a sharp reduction in earnings for that year only.

In spite of a £1,000,000 decline in the value of the Corporation's quoted investments, the chairman, Mr. S. H. Smith, does not take a pessimistic view of the situation. The investments are intrinsically sound, he says, and the directors anticipate a general recovery before long in the prices of the base metal equities which provide the bulk of the Corporation's income. As a token of this belief, British Tin has slightly reduced its investments in the tin mining industry, and reinvested the proceeds in other sections of its portfolio which includes copper, lead and zinc producers, presumably in the expectation that these show the best prospects for a near-term recovery. Mr. Smith's statement (p. 673) includes a general picture of the base metal situation, and the prospects for a recovery in demand.

MORE GOOD ASHANTI VALUES

Development at Ashanti Goldfields property in May once again disclosed some extremely high values on the lower levels of the mine.

On the 41st level, the deepest so far developed, sampling in a crosscut gave 46.1 dwt. over a width of 13 ft., which compares favourably with the previous peak values of 32.7 dwt. over 18½ ft. On the 34th level, May development included 39.6 dwt. over 8½ ft.

Production rate at the mine has continued to advance, and in May 31,250 tons were milled for an estimated profit of £108,370 against £103,417 in April.

ZANDPAN: "PLANS ARE UNDER CONSIDERATION"

In his statement to shareholders, Mr. S. G. Menell, chairman of Middle Witwatersrand (Western Areas), says that plans are under consideration for the development of the Zandpan Area. Additionally, prospecting is under way in an area to the east of the Hartebeestfontein and Buffelsfontein mines, near Klerksdorp, while in the Central African Federation various base-metal prospects are being investigated. Middle Wits, it will be remembered, has a 20 per cent interest in any Anglovaal new business outside the Federation and a 40 per cent interest in any ventures within the Federation undertaken by Anglovaal Rhodesian Exploration Company.

Meanwhile, Middle Wits' portfolio of young gold producers continues to provide the company with an ever-growing source of revenue. In 1957 dividend income rose to £354,376, remarkable growth when compared with the 1955 figure of £40,961. Compared with last year, 1957 revenue from property sales is very much lower, and the company's overall income is therefore £70,000 lower at £621,152. After deducting taxation, write-offs, administration and other expenses, and the proportion of profits attributable to outside shareholders in the subsidiaries, however, net profit for the year comes out at £302,920 compared with £252,413 in 1956. From this, a dividend of 10 per cent is declared, the first for many years.

At their present price of about 11s. 6d.,

the shares appear fully valued for the present.

GENERAL MINING'S INCOME

With its investment portfolio consisting, in the main, of young gold producers, particularly the extremely successful mines in the Lucas block, it is surprising that the rise in General Mining's dividend income in 1957 was not greater than the £200,000 actually achieved. True, the corporation has a considerable stake in the hard-pressed platinum industry (via the Lydenburg company), but even without knowing the detailed breakdown of the gold portfolio, this alone would not seem to provide a full explanation. The report gives no clue, and Sir George Albu's statement will therefore be awaited with more than usual interest.

Meanwhile, suffice it to say that net income of the corporation in 1957 rose to £1,512,891 from £1,240,155 in the previous year. Of this, £204,095 was used to write down investments, while transfers to reserves totalled £394,927. Dividends on the ordinary shares totalled 5s. for the year, absorbing £722,834 (1956, 4s., £578,268).

General Exploration, Orange Free State, whose report was also issued this week, must now be considered as little more than an investment company with a substantial interest in the Riebeeck mine, as well as the ownership of the rights on the "lower reefs" underlying that property. No prospecting operations were carried out in 1957.

SUSPENDED ANIMATION FOR KENTAN

The news that the Geita Gold Mining Company's property in Tanganyika is to go on to care-and-maintenance brings to an end—temporarily, at least—a remarkable history of determination and hard work on the one hand, and of the most evil luck on the other.

The chairman of Kentan Gold Areas (Geita's parent company) set the tone for this year's operations at the 1957 annual meeting. Earlier, New Consolidated Gold Fields, the consulting engineers, had indicated that their mid-1957 loan of £100,000 was Geita's last chance, at any rate so far as they were concerned. Nevertheless, the final attempt at turning Geita into an economic proposition, albeit on a smaller scale than previous efforts, was then proceeding reasonably smoothly, and the main threat to the company was the erosion of working profits by upward cost pressure. Any further cost inflation, the chairman said, would mean that development of the Geita field would have to cease.

It is somewhat ironic, therefore, that Geita's closure should in the end have been forced by metallurgical difficulties in connection with the new higher grade ore rather than by rising costs. With mill throughput getting within a stone's-throw of the target of 30,000 tons monthly by July (29,000 tons were milled in March), and development showing satisfactory values in spite of various stoppages, there was at least a glimmer of hope that the break-even point was not impossible of attainment. This failure at the last fence is really rotten luck.

Whether or not *finis* must now be written to the Geita mine, there is no denying the company's faith in the property, which was once more in evidence in the commissioning of two large diesel generators a matter of weeks only before the withdrawal from the mine. It deserves better in the future.

M.A. HANNA LOSES NO TIME

The full-scale investigation of St. John d'El Rey's iron and gold potentialities, promised by the M. A. Hanna Co. on taking control of the company, is already in full swing, only three months after it was first proposed. This is stated by Mr. Leo Model, chairman of d'El Rey, in his review of 1957 operations.

It is stated that the investigation will last at least one year before any definite decisions can be taken. Whether this has any bearing on the original estimate of three years for reaching a self-supporting basis must await events for confirmation, but it is noteworthy that Mr. Model makes no further reference to the time factor, merely reaffirming that, as a result of the investigation, "it is hoped that the deposits can eventually be brought to a production stage".

As far as the gold properties are concerned, "internationally reputed" engineers and geologists are carrying out a technical appraisal of the future prospects. In particular, efforts are being made to find new ore above the No. 8 level of the Morro Velho mine. These, however, are long-term plans, and, with the gold-mining loss running at £40,000 monthly, shareholders will be glad to hear that negotiations have been initiated with the Brazilian Government for the renewal of assistance after the present expiry date (June 30).

JUNE KAFFIR PAYMENTS

The opening of the June Kaffir dividend season was marked by a sharp but not wholly unexpected reduction in the payment from Vaal Reefs, due partly to the normal Anglo American practice of declaring dividends on an interim-and-final basis, and partly to the increase in issued capital.

Other dividends of the mines in the Anglo American group were much as expected.

Company	Dec., 1956	June, 1957	Dec., 1957	June, 1958
	s. d.	s. d.	s. d.	s. d.
Brakpan ...	0 6	0 4½	0 4½	0 4½
Dagga. ...	2 9	2 6	2 9	2 6
E. Dagga. ...	0 9	0 9	0 9	0 7½
Springs ...	0 3	—	0 4½	—
S.A. Lands ...	1 6	1 6	1 6	1 6
Vaal Reefs ...	1 0	1 3	2 3	1 6
W. Reefs ...	1 3	1 3	1 3	1 3

RAND AND O.F.S. MONTHLY RETURNS

Interest in the May returns of the South African gold producers' centres, as is often the case on the younger mines of the Far West Rand, Klerksdorp, and the O.F.S., which, almost without exception, improved on the April figures with regard both to tonnage throughput and profits. The effect of a higher gold price (248s. 10d.) against (248s. 8d.) was strongly in evidence.

Among the most outstanding of the new mines' returns was that from Stilfontein, where better uranium earnings were the main factor in a new record profit of £475,214, achieved in spite of higher costs. Uranium earnings also helped Buffelsfontein, General Mining's other Klerksdorp producer, to a new high, while a reduction in costs enabled Hartebeestfontein (Anglo-Transvaal) to complete the Lucas Block picture of higher profits all round.

On the West Wits Line, all the four companies administered by Gold Fields did better than in April, Doornfontein and West Drie setting up new records in the process, and Blyvoor, the Central Mining property east of West Drie, also did better by virtue of a sharp increase in tonnage milled.

The O.F.S. picture was somewhat marred by a slump in Freddies' grade from 6.2 dwt. in April to 5.2 dwt. in

(*Continued on page* 672)

MIDDLE WITWATERSRAND (WESTERN AREAS) LIMITED

(Incorporated in the Union of South Africa)

CHAIRMAN'S REVIEW

This review of the company's affairs by **Mr. S. G. Menell,** chairman of Middle Witwatersrand (Western Areas) Limited, has been circulated with the report and accounts for the year ended December 31, 1957:

The new gold and uranium mines which your company's pioneering efforts have helped to establish during the last decade have resulted in your company now having in its portfolio substantial holdings in the Hartebeestfontein, Buffelsfontein and Stilfontein mines in the Klerksdorp area, as well as in the Virginia, Merriespruit, Free State Saaiplaas and Riebeeck mines in the Orange Free State. Members were given rights to subscribe for shares in a number of these companies.

Your company's growth is illustrated by the increase in dividend income from £7,495 in 1948 to £354,376 in 1957. This has enabled your company to resume the payment of dividends. Your company's shareholdings in mines in the Klerksdorp area which had a market value of £4,836,595 on December 31, 1957, contributed a dividend income of £328,094 for the year under review. It is expected that your company's subsidiary, New Klerksdorp Gold Estates Limited, as a result of its uranium operations will resume the payment of dividends during the current year.

The market value of the company's shareholdings in Orange Free State mining companies at December 31, 1957, was £1,563,198. It will probably be some years before a substantial return can be expected from these investments. The Virginia mine is now milling at the rate of 100,000 tons per month. During 1957 the mine made a working profit of £3,192,421, all of which was appropriated to meet interest payments, the cost of increasing the pumping capacity, the expansion programme and uranium and acid loan repayment instalments. The Free State Saaiplaas mine in the Virginia area and the Riebeeck mine in the Odendaalsrus area are still in the shaft sinking stage. As has been announced, both

these mines, before production can be undertaken, will require further capital funds, to which your company will be called upon to contribute.

Development

In continuation of your company's exploratory work plans are under consideration for the development of the Zandpan mining area which adjoins the Hartebeestfontein mine on the west and the Vaal Reefs mine on the north. Furthermore, a prospecting programme is being carried out, in conjunction with other parties, in an area to the east of the Hartebeestfontein and Buffelsfontein mines. Your company is also participating in the investigation of various base metal prospects in the Central African Federation.

During the year your company raised the sum of £1,250,000 by means of an issue of 6½ per cent secured debenture stock. Anglo-Transvaal Consolidated Investment Company Limited and your company's subsidiary, Virginia Land and Estate Company Limited, have guaranteed the capital sum and interest on the loan. Virginia Land and Estate Company Limited, which is developing the town of Virginia, has passed first mortgage bonds over certain of its township property in Virginia, having an appraised value of over £2,500,000 as security for the debenture stock.

The town of Virginia, which caters for the housing requirements of Harmony, Virginia, Free State Saaiplaas and Merriespruit mines and for the non-mining population, now has a total population of approximately 38,000, which figure includes approximately 13,000 African mine workers who are resident in single quarters on the four mines. The rateable value of property in the town now exceeds £13,000,000. The Harmony, Virginia and Free State Saaiplaas mines propose to increase their mining activities during 1958. This should lead to an increase in population and to a resultant increase in the demand for property in the town. A number of prominent business and financial organizations have already erected buildings and established branches in the civic centre and others are at present engaged in doing so.

During the year Virginia Land and Estate Company Limited acquired 432 houses and a block of flats from Merriespruit (Orange Free State) Gold Mining Company Limited for the sum of £1,700,000 of which £1,200,000 is payable in twelve monthly instalments and the balance when the Merriespruit mine resumes production for gold. Of the finance required for this transaction £1,150,000 has been provided by the passing of mortgage bonds over the housing concerned, these bonds being guaranteed by Anglo-Transvaal Consolidated Investment Company Limited and by your company. All these houses have now either been let to mining companies and to private individuals or reserved for occupation during this year.

In conclusion, I desire to place on record your Board's appreciation of the services rendered by our secretaries and technical advisers, Anglo-Transvaal Consolidated Investment Company Limited, both at the head and London offices, and also by the managers and staffs of our subsidiary companies.

The annual general meeting of members will be held at Anglovaal House, 56 Main Street, Johannesburg, on Friday, June 27, 1958, at 11 a.m.

THE F.M.S. CHAMBER OF MINES

The Forty-seventh Annual General Meeting of the F.M.S. Chamber of Mines was held at Ipoh, on May 29. **The Hon. Mr. K. J. Cumming, J.P., B.E.**, Vice-President of the Chamber, in the course of his speech, reviewed the recent history of international tin control. He said:

It is quite obvious that but for the International Tin Agreement the price of tin would have been very much lower than it is today. The introduction of export control has, however, placed considerable strain on all sections of the tin mining industry. One pleasing aspect of the agreement is the spirit of compromise which has prevailed to date among the member nations and their determination to see that it is not allowed to fail.

The effect of poor consumer demand in the U.S.A. and the appearance of comparatively large quantities of Russian tin on the market from April, 1957, onwards was such that, had nothing been done to regulate the production of tin so as to equate supply and demand, an impasse would certainly have been created.

It is difficult to gain a clear picture of the world statistical position of tin because relatively little is known of what is going on inside Russia and China.

Importance of Tin to Malaya's Economy

Turning to the outlook for Malaya's tin industry, Mr. Cumming said that while he fully supported those who stressed the need for a more diversified economy, it was clear that the rubber and tin industries would continue to supply the bulk of the country's much-needed revenue for a long time to come. No one could be in any doubt as to the importance of the tin mining industry to the well-being of Malaya, and the need for every encouragement being given to it to remain in business. How was this to be done? Mr. Cumming then continued:

The answer is twofold. Firstly, there must be a favourable climate for re-investment; and secondly, a more liberal land policy. With regard to the former, the present Federation Government has, through Members of the Cabinet and other high-ranking officials, repeated on numerous occasions its friendly attitude towards overseas capital, and this is a source of much satisfaction to the Malayan tin mining industry.

Capital re-investment, however, is just as important as capital investment, and it is indeed tragic to think that capital and plant already within the country cannot be employed because of the non-availability of land about which I will have something to say in a few minutes.

The Prime Minister of the Federation is worthy of the highest commendation for the suggestion he made at the opening of the 14th session of the Economic Conference on Asia and the Far East in Kuala Lumpur on March 5, 1958, that Asian countries desirous of attracting foreign private capital to aid economic development should draw up an international charter guaranteeing protection to foreign private investors.

Vital to Liberalize Land Alienation Policy

The mining industry is suffering from land starvation, and its efforts to find new tin-bearing areas to replace the rapidly dwindling ones held under mining lease are being hamstrung by a land policy which can only be described as totally unrealistic. Unless there is a more liberal land alienation policy, Malaya's tin production will rapidly decline, with devastating effect on the economy of the Federation. This must not be allowed to happen. I am one who believes that Malaya still has considerable hidden reserves of tin, but these can only be discovered by intensive prospecting. The present policy, under which large tracts of country are virtually closed to mining, or even prospecting, is a short-sighted one, and the need for Government action to remedy the situation is very long overdue.

It has been pointed out on numerous occasions in the past that, as the winning of tin is a national project, and not confined to individual States, the need to formulate a co-ordinated land policy is an urgent matter. I regret to say, however, that, despite statements of this sort from time to time, very little of a concrete nature has been done to remedy the position. The mining industry must be encouraged in its search for new mining land. At this juncture I should like to remind Government that it is due solely to the income derived from the sale of tin and rubber that this country has made such marked progress in the social and economic fields. I should also like to point out that tin is a wasting asset and that it is therefore most essential that the examination and prospecting of new areas should keep pace with the rate at which land already held under mining lease is progressively exhausted. That this is not the case is evidenced by the fact that at April 30, 1958, there were no less than 14 dredges closed down not because of Tin Restriction, but because of the exhaustion of their ore reserves. The position is therefore serious, particularly as many more mines are rapidly running out of land.

The formation of a National Land Council in January of this year under the chairmanship of the Minister of Interior and Justice is welcomed by the mining industry as a step in the right direction. However, time is running out and it is most essential that every effort be made by the National Land Council to formulate a sound and realistic land alienation policy at the very earliest.

Tin Control Only a Breathing Space

It may be thought in some quarters that, because of Tin Restriction, there is not the same urgency for prospecting. This is a fallacy. Tin Control has merely provided a breathing space for the tin mining industry, and now is the time for prospecting to be undertaken on a large scale when staff is available and when mining organizations are in a position to devote more of their energy to this important aspect of their activities.

The report of the aero-magnetic mineral resources survey of the Federation, carried out by a Canadian team in 1956-57, was handed to the Federation's Minister for Natural Resources towards the end of April this year. This should be of considerable benefit to the country, but I should like to point out that it will in no wise eliminate the need for testing on the ground.

PENGKALEN, LTD.

The fiftieth annual general meeting of Pengkalen, Ltd., was held on May 28, in Redruth.

Major W. E. Hosking, a director, presided in the absence by reason of illness of Mr. D. W. Thomas (Chairman).

The following is an extract from the Chairman's circulated statement:

The Accounts for the year ended September 30, 1957, show a profit of £85,641, after payment of £40,309 for Royalty on Ore Sales and the provision of £46,888 for Taxation. Four dividends—totalling 3/6d. per share on the Preferred Ordinary shares and 3/- per share on the Ordinary share was paid in respect of the year.

The volume of ground treated was almost the same as during the previous year, but the amount of tin-ore recovered decreased from 531.87 tons to 470.27 tons, operations being hampered during the latter part of the year by extremely shallow limestone bedrock.

Production of Tin-ore during the period October 1 to December 31, 1957, was 115¼ tons, of which 93¼ tons were produced between October 1 and December 14, before Restriction on production and sales became operative. From December 15, 1957, to March 31, 1958, Ore Sales as authorized under the Tin Control Regulations totalled 72¼ tons.

The International Tin Agreement which came into force on July 1, 1956, and the Tin Control (Buffer Stock) Regulations, 1956, became operative in September, 1956, and during the period under review your Company's compulsory contributions to the Buffer Stock—a total of £21,589—were made from the proceeds of current production.

The effect of restriction varies considerably as between producing countries.

For the producers who have to pay to the Malayan Government the second and third contributions each of 5,000 tons metal, or cash equivalent, the cost, both in reduced output and in cash, of maintaining the restriction scheme is very considerable. Although the full repercussions on your Company's affairs cannot yet be fully assessed, nevertheless it is thought that they will inevitably be serious, and may necessitate periodic cessation of mining operations. Your Directors will, however, do everything to ensure that the effects of Tin Restriction are minimized as far as possible.

Shareholders have already been advised that consideration will be given to the dividend position at the end of each quota period.

At an Extraordinary General Meeting of the Company held on April 24, 1958, the necessary support was received for the proposal to convert the Preferred Ordinary shares in the capital of the Company into Ordinary shares ranking pari passu in all respects with the existing Ordinary shares.

GOPENG CONSOLIDATED

The forty-fifth annual general meeting of Gopeng Consolidated, Ltd., was held on May 28, in Redruth.

Major W. E. Hosking, a director, presided in the absence by reason of illness of Mr. D. W. Thomas (Chairman).

The following is an extract from the Chairman's circulated statement:

The Accounts for the year ended September 30, 1957, show a profit of £175,198, after payment of £74,294 for Royalty on Ore Sales and the provision of £90,193 for Taxation. Four dividends—two each of 6d. per 5/- Unit of Stock and two each of 9d. per 3/6d. Unit of Stock were paid in respect of the year.

Production of tin-ore during the period October 1 to December 31, 1957, was 243¼ tons, of which 175¼ tons were produced between October 1 and December 14 before Restriction of production and sales became operative. From December 15, 1957, to March 31, 1958, Ore Sales under the Tin Control Regulations totalled 118¼ tons.

The International Tin Agreement came into force on July 1, 1956, and the Tin Control (Buffer Stock) Regulations, 1956, became operative in September, 1956. During the period under review your Company's compulsory contributions to the Buffer Stock—a total of £41,535—were made from the proceeds of current production.

The International Tin Council decided in December, 1957, to restrict tin exports from those countries which ratified the International Tin Agreement by imposing a cut of 28½% in the estimated annual rate of production for the period December 15, 1957, to March 14, 1958, and to call up the second contribution to the Buffer Stock. In January, 1958, the Tin Council extended the first quota period from March 14 to March 31 with no increase in permissible exports. At the same time, it was announced that permissible exports of the signatory countries during the following quarter, April to June, would represent an overall cut of approximately 40% of their estimated normal annual rate of production. The call up of the third contribution to the Buffer Stock was also announced.

The effect of restriction varies considerably as between producing countries.

For the producers who have yet to pay to the Malayan Government the second and third contributions each of 5,000 tons metal, or cash equivalent, the cost, both in reduced output and in cash, of maintaining the restriction scheme is very considerable. Although the full repercussions on your Company's affairs cannot yet be fully assessed, nevertheless it is thought that they will inevitably be serious, and may necessitate periodic cessation of mining operations. Your Directors will, however, do everything to ensure that the effects of Tin Restriction are minimized as far as possible.

The report and accounts were adopted.

May. The result, in spite of substantially lower costs, was to increase Freddies' overall loss to almost £27,000, the April figure being £9,644. This poor result was partly compensated for by improved results at two more of the less-favoured O.F.S. properties, Loraine and Virginia. At Loraine, gold and uranium profits, though still meagre, were 70 per cent up on the April return, thanks to a rise of £5,000 in uranium revenue, and falling costs at Virginia contributed to a £10,000 increase in overall earnings.

Othere useful profit increases were recorded by the O.F.S. share-market joint leaders F. S. Geduld and Western Holdings, and by Harmony in spite of continued labour troubles at the mine.

Financial News and Results

Kalgurli Ore Treatment.—The interest of North Kalgurli (1912) in Kalgurli Ore Treatment Co. has been acquired by Gold Mines of Kalgoorlie (Aust.).

West Vlakfontein Capital Write-Down ?—The abandonment of options in the Kinross area, and the consequent writing-off of £30,032 meant that West Vlakfontein's 1957 operations ended with a net loss of £22,001, compared with a profit of £1,599 in the preceding twelve months. Additionally, the shaft, works and other assets which were sold last year to Vlakfontein Gold Mining have been written off against capital and reserves. The balance sheet now shows total assets of £295,701 represented by an issued capital of £1,687,579, and Mr. E. Jacobson, the chairman, says that proposals for a capital reorganization will be submitted as soon as the time appears propitious. West Vlakfontein retains its interests in the Waterpan area, proven to be underlain by large tonnages of medium-grade reef, and in the Potchefstroom district, where drilling has recently begun, and it seems likely that the company's future lies in the field of finance rather than in actual mining.

Minerals Separation.—Group profits of Minerals Separation were well maintained in 1957. Net balance available was £289,984, from which an unchanged final of 20 per cent, making 30 per cent for the year, has been recommended. Treasury consent for a one-for-ten rights issue at 12s. 6d. has been obtained.

Larut Dredge Closure.—The impracticability of working low-grade deposits intermittently has meant the closure of another Malayan tin dredge, one of the two operated by Larut Tin Fields.

Modder B. Liquidation Defeated.—At the annual meeting of Modder B. last week, the proposal that the mine should be voluntarily wound up was defeated on a poll.

Nigel G.M. to Return 2s.—At the annual meeting of Nigel Gold Mining Co. recently, resolutions were passed approving the proposed capital return of 2s. per share. Court confirmation is now sought.

(*Continued on page* 676)

BRITISH TIN INVESTMENT CORPORATION

INCREASED GROSS REVENUE

ANOMALOUS EFFECT OF O.T.C. LEGISLATION

SHARP FALL IN BASE METAL PRICES

MR. S. H. SMITH ON THE POSITION AND OUTLOOK

The annual general meeting of British Tin Investment Corporation, Ltd., will be held on June 25 at St. Swithin's House, 11-12 St. Swithin's Lane, London, W.C.

The following is the statement by the chairman, **Mr. S. H. Smith, O.B.E., M.C.,** circulated with the report and accounts:

The revenues of the Corporation and its subsidiaries for the year ended December 31, 1957, after deducting administrative and other expenses but before charging taxation, was £646,003. This compares with £627,894 for 1956. Inevitable increases in costs of administration have raised the administrative and general expenses of the Group from £10,461 in 1956 to £11,392 in 1957. For taxation, we provided £308,334 against £275,510 in 1956. The net revenue of the Group amounted to £338,586 compared with £360,269 in the preceding year; of this amount, £26,278 was retained in the accounts of the subsidiary companies and £20,500 was set aside as a provision against the shares held by the finance subsidiary, leaving £291,808 to be disposed of in the Corporation's accounts. To this must be added £135,721 balance brought forward from the 1956 accounts, making £427,529 available for distribution.

A Considerable Disadvantage

The introduction of special legislation to benefit Overseas Trade Corporations (O.T.C.s) in the 1957 Finance Act was an event of major importance to the tin industry because many of the producing companies in Malaya and Nigeria will benefit substantially from it. Not unnaturally, we anticipated that this Corporation, which has very large shareholdings in such companies, would profit indirectly but materially from the new tax concessions. Unfortunately, however, the contrary is the case. Instead of benefiting through our shareholdings in O.T.C.s, under the Act we are likely to suffer a considerable disadvantage.

The reason for this anomaly is that a substantial part of the profits tax relief given by the Act to O.T.C.s is being recovered by the Revenue from corporate shareholders in O.T.C.s by charging such shareholders with profits tax on the dividends they receive from O.T.C.s. Under the "two tier" system of profits tax we should have been very seriously penalized and, as shareholders are aware from the circulars which have been sent to them in recent months, we made representations to the Board of Inland Revenue. Our first approach was rejected, but we persevered and, in order to keep our position open, deferred the preparation of our Accounts for the year 1957.

The position will, however, be considerably modified if a flat rate of profits tax is introduced as from April 1, 1958, as proposed in the Budget. This proposal relieves us to some extent of the excessive burden which the distributed profits tax would have placed on us, since it has always been the policy of the board to distribute in dividend a very high proportion of the earnings. The proposals in the Budget do not however wholly counteract the adverse effect of the Overseas Trade Corporation legislation of last year.

The "Two-Tier" System

Under the "two tier" system of profits tax there were a number of anomalies which were the subject of comment in the financial press from time to time. One of these anomalies has resulted in your Corporation having been charged at the full distributed rate on profits which were, in fact, not distributed but carried forward in the Accounts. By declaring a dividend from these profits before June 30, 1958, the Corporation can obtain the benefit of the tax already paid on them. If they are not distributed, the Corporation will suffer a disadvantage which could be very substantial if the proposed flat rate is deferred or modified in the passage of the Finance Bill through the House. To guard against this contingency, and after full consideration of all the circumstances, your Directors decided to recommend the distribution of a further 10% dividend in respect of the year 1957, which will largely be provided, not out of the profits of that year, but out of the past profits on which distributed profits tax has been charged. If their proposal is approved, the Directors consider that it will be necessary to restore the Corporation's carry forward to its present level by making a corresponding reduction in the total amount of the distributions from the revenue for the year 1958 and, accordingly, it would not be our intention to declare the customary interim dividend in respect of the year 1958. In order that the dates on which members receive their dividends are not unnecessarily disturbed, it is proposed to pay the final dividend for the financial year 1957 at the time when an interim dividend in respect of the year 1958 would normally be paid.

The Directors' Views

The net effect of the proposals, therefore, is that shareholders will not receive an additional dividend but will receive a larger dividend from profits already taxed than could be paid from equivalent current profits subject to tax.

Owing to an understandable delay by many companies in announcing finally whether they have elected O.T.C. status and if so from what date, we are not yet able to determine how much of the income credited in the 1957 Accounts will in fact be liable to profits tax. In those circumstances your Directors have thought it prudent to provide for liability by reference to the maximum amount which may be payable, although they hope that when full information becomes available the actual liability may be materially less. The provision required for profits tax on this basis was £41,150 against £14,246 in 1956.

It is reasonable to expect that those companies which qualify as O.T.C.s and thereby gain the benefit of the tax concessions granted in the 1957 Finance Act will be to some degree in a position to distribute higher dividends, and from that this Corporation would derive some benefit. But it does not seem to your Directors probable that these companies will in fact consider it wise to increase their dividend distributions to anything approaching the full extent of the tax concessions received by them. These considerations add to the difficulty of calculating now what will be the final effect of the recent legislation upon this Corporation's revenues.

Dividend Recommendation

The above explanation of the tax position and its effect on our dividend policy was a necessary preliminary to a statement of the Corporation's appropriations. As stated in the first paragraph of this statement, the amount available for distribution, including the sum of £135,721 brought forward from 1956, was £427,529. The two interim dividends paid, amounting to 25%, absorbed £302,606. Your Directors now recommend the payment on August 19, 1958, of a final dividend of 10% in respect of the year 1957. This will absorb £121,042 and will, therefore, reduce the amount carried forward to the very low figure of £3,881, although on the Group as a whole the figure is £64,086. The balance carried forward in the Group's accounts last year was £169,648. It is, as already explained, the Board's intention to restore the carry forward by reducing the amount distributed out of the 1958 profits.

In the past it has been our practice to include in the revenue for each year the dividends and interest actually declared on our investments during the Corporation's financial year, even though the amounts were not receivable during that year. Your Directors have for some time been anxious to change this practice and to take credit only for the dividends and interest actually *received* in the financial year. This conforms with current accounting practice. Your Directors therefore have in mind the preparation of the 1958 accounts on the basis of income actually received during the financial year.

Fall in Share Values

During the year 1957 there was a marked decline in the market prices of practically all shares of companies producing non-ferrous metals. This reflected over-production in many quarters of the globe, and the failure of the United States of America to absorb, whether by stockpiling or into industry, as great a proportion of the available metals as had been hoped. Prices obtained for metals produced were lower, as is indicated later in this statement, and costs of production and taxation were uniformly higher. As a consequence of the general fall in share values the total market value of the quoted investments of the Group, which was £4,919,416 at December 31, 1956, declined to £3,825,055 at December 31, 1957.

Your Directors do not take a pessimistic view of this situation, for they believe that the Group's investments are inherently sound and they anticipate that there will be some general recovery before long in the value of shares of non-ferrous metal companies. These companies have enjoyed remarkable prosperity in recent years, and, whilst one can hardly expect a complete recovery for some time, your Directors do not consider that the present recession will be permanent. Any marked revival in consumption in the United States of America should rapidly react favourably upon the values of the shares in which we are interested.

Changes in Holdings

The usual lists of our principal investments are set out at the end of this statement. A number of comparatively minor changes have been made in our holdings and there has been a slight reduction in the proportion of the Corporation's funds invested in tin shares with a corresponding increase in other categories. Tin shares continue to form about two-thirds, measured by market value, of the total portfolio.

As I have said, the average prices of copper, lead and zinc all suffered sharp falls in 1957 and the price of tin also declined. The following table of cash prices of the London Metal Exchange indicates what happened :—

	1956			1957		
	High £	*Low* £	*Average* £	*High* £	*Low* £	*Average* £
Tin (Cash Standard)	890	724	789	803	730	755
Copper (Cash Standard)	436	263	329	272	176	219
Lead (Prompt)	126	110	116	118	69	97
Zinc (Prompt)	105	92	98	105	61	82

International Tin Council's Decision

In my statement last year I referred to the International Tin Agreement which was ratified in the summer of 1956. Early in 1957 the International Tin Council varied the original Agreement by raising the price at which the Manager of the Buffer Stock had to buy tin for the pool from £640 to £730 per ton and by raising the price at which he could sell from £800 to £830 per ton. Owing to lack of demand for the metal and the consequent steady fall in the price of tin later in the year, the Manager of the Buffer Stock had to buy some 10,000 tons of tin to maintain the floor price of £730. In doing so it is believed that he practically exhausted the initial contribution of cash provided for the purpose by the producers. As a consequence, on December 5, 1957, the International Tin Council not only called for an immediate second contribution of £3,650,000 from producers, but also fixed the exports of the six producing member countries for the period December 15, 1957, to March 15, 1958, at an average of 28½% below their hitherto unrestricted output. At the same time the Council authorized the Buffer Stock Manager, in the same three months' period, to sell tin as low as £781 per ton instead of £830 as fixed in the original Agreement.

The result of this decision to enforce restriction of production was to reduce the exports permissible during the period mentioned from 37,000 tons to 27,000 tons. Unfortunately, the universal lack of consumer demand, particularly in America, necessitated further large purchases of tin by the Buffer Stock and on December 30, 1957, the third and final contribution of 5,000 tons to the Buffer Stock was called up. In January, 1958, the International Tin Council took further steps to restrict production. The termination of the first restriction period was postponed from March 15 to 31, 1958, without any increase in the permissible exports during the period with the result that the permissible exports for the first quota period of 34 months were reduced to the rate of 23,000 tons a quarter. The Council also fixed a second restriction period from April 1 to June 30, imposing a cut of about 40 per cent on the annual unrestricted rate of production by fixing the total of exports during the period at 23,000 tons.

Another meeting of the International Tin Council took place at the end of April, 1958, when the Council decided to maintain the same rate of restriction during the third quarter of 1958. An announcement was also made by the Buffer Stock Manager during April that contributions had been received from producing countries to the special fund, which was first mentioned at the January meeting of the Council.

A Temporary Phase

At the time of writing, the London Metal Exchange price is still only slightly above the floor price of £730 per ton. One of the main depressing factors has been the substantial sales of Russian, Polish and Chinese tin on the world market, which amounted to some 9,000 tons in 1957 and may well exceed this figure in 1958. Nevertheless, it is considered that the steps taken by the International Tin Council should lead to a rise in the price of tin within the next few months. Your Directors believe that the decline in the consumer demand for tin is a temporary phase and that the long term outlook is good.

On August 31, 1957, the Federation of Malaya achieved independence within the Commonwealth. Its Government has shown a firm hand in dealing with Communism, made an auspicious start in governing its own affairs and adequately recognized the importance of the prosperity of the mining industry to the Federation's economy.

Three Important Factors

I turn now to Copper, Lead and Zinc. I have set out above the prices of these metals in 1956 and 1957, but even those figures do not tell the whole story. By the end of 1957 Copper had fallen to £181, Lead to £73 and Zinc to £61. A year ago, in expressing confidence in the long-term prospects of these three metals, I qualified my remarks by mentioning three factors which could cause further short-term falls below the levels prevailing at the end of 1956. These factors were :

(a) A recession in U.S.A.
(b) A decline in the automobile industry, and
(c) The possible abandonment of stock-pile purchases by the American Government.

During the second half of 1957, and particularly in the last three or four months of this period, all these three factors came into play, and they explain why the prices of Copper, Lead and Zinc at the end of 1957 were substantially below the average prices for that year. Fortunately it may be too early yet to refer to a "major" recession in U.S.A., but there is no question that the recession is of much greater force than was anticipated last Autumn, and of greater force than the comparable recessions of 1949 and 1953/54. Naturally one of the prime features of the recession is the decline in the demand for and production of automobiles in the United States, a situation which is only compensated in a minor degree by the prosperity of the British automobile industry.

Finally, world prices of Lead and Zinc have had to face the tapering off, amounting almost to abandonment, of the American Government's strategic stockpile purchases.

Hope of Improvement

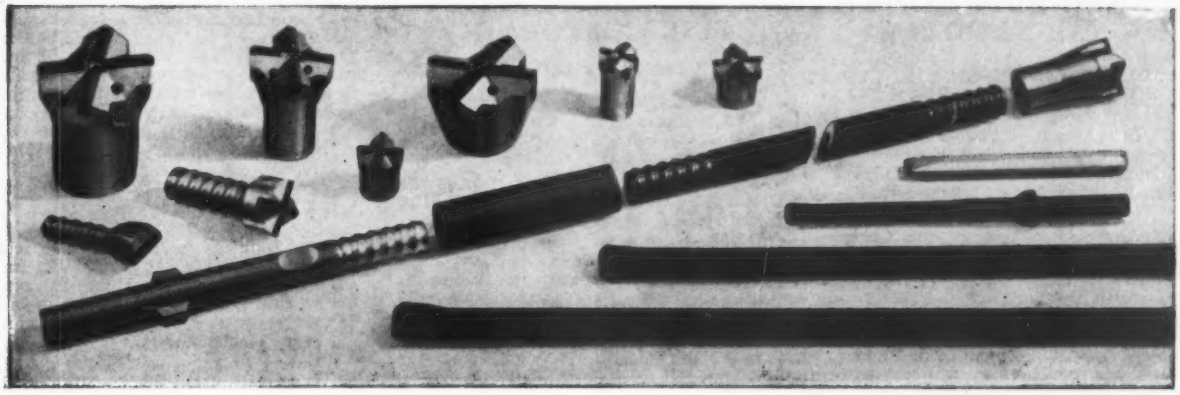
It is idle to expect any real improvement in the prices of these three non-ferrous metals until there is once more an upsurge in American economic activity. There are, however, growing signs that the present low level of prices is causing both enforced and voluntary cuts in production throughout the world, and on this ground there is reason to hope that the prices will not fall much further. Even this hope could, however, be upset if the present U.S.A. recession is intensified and continues throughout the major part of 1958.

Moreover, Copper, Lead and Zinc have their own particular problem in that it is not yet known whether or not the U.S.A. Government intends to increase the existing import tariffs on these metals. Such a move would tend in theory to reduce the London prices by some part of the American tariff increases, although it is possible that the London prices may already have discounted this factor.

Quite apart from the considerations set out in earlier paragraphs of this statement and ignoring the effect of the possible change from the accruals basis to that of income actually received, I think that shareholders must be prepared for the Corporation's revenue to be substantially lower in 1958 than in 1957.

The Corporation's Investment Manager, Mr. C. E. Thornton, visited the United States of America and Canada in the autumn of 1957 and made valuable contacts with important business executives there so that the Corporation may be in a position to take full advantage of any opportunities that may arise for investment in those countries.

A second edition of *In a Metal Merchant's Office* has lately been published by Quin Press Ltd., and edited by L. H. Tarring and H. G. Cordero. Those brokers and others who have already found the book of value as a training manual may be interested to know that this second edition (1958) makes a unique guide to trading in metals, ores, iron and steel, and scrap. In its 355 pp. the authors make available in readable form the quintessence of their knowledge gained from nearly forty years' close study of metal trading in all parts of the world. This second edition is considerably larger than its predecessor, all the sections having been completely revised and enlarged, whilst there are a number of entirely new chapters discussing light metals, atomic metals, sampling of ore and metals, additional sections on scrap metals and residues, other metal exchanges (besides the London Metal Exchange), a very much larger tinplate section, and shipbreaking. The book contains numerous specimen contracts, articles on pricing problems, and very full details of the operating methods on the London Metal Exchange, including borrowing and lending, options, buyer's option to double, seller's option to double, the put, the call, double option, arbitrage, clearing, and specimen prices.



PARTICIPANT BRUSSELS WORLD FAIR 1958

SANDVIK COROMANT—

A Complete Range of Drill Steel Equipment

You know as well as we do the advantages of buying all your drilling equipment from one supplier. These advantages become still more evident if you buy from the Sandvik Range. The Sandvik Steel Works are the world's largest manufacturers of tungsten carbide for rock drilling. Their production covers integral steels, detachable bits, extension steels and stone working tools—all made of high-quality Swedish alloy steel, all fitted with the well-known Coromant tungsten carbide inserts.

Integral steels with 50% longer life

Sandvik Coromant integral steels have up to 50% longer rod life than ordinary steels, thanks to anti-corrosion SR-treatment, which protects them during transport, storage and actual drilling. In addition, air-tight plastic caps give bit and shank extra protection during transport and storage. They are available in these standard sizes:—

$\frac{3}{4}$" hollow hexagon	1'4"-13'1"
$\frac{7}{8}$" hollow hexagon	1'4"-21'0"
1" hollow hexagon	2'6"-21'0"
Flexible drill steels	2'7"-31'6"

Precision-made rock bits

The threads of Sandvik Coromant (cross and X-design) bits are precision milled. The bits are so accurately manufactured that not only smoother drilling but *longer life* are ensured. Standard bit diameter sizes range from $1\frac{1}{2}$" to $4\frac{1}{2}$". The 773 bits (bottoming type) are available with GD400 and GD600 thread, or with $1\frac{1}{4}$", $1\frac{1}{2}$" and 2" rope thread. The 776 bits, for standard shoulder-type drill rods, are available with threads ranging from $\frac{7}{8}$" to $1\frac{11}{16}$".

Efficient extension steels

The rope-threaded joints of Sandvik Coromant extension steels are solid and make joining and unscrewing extremely easy. Sizes available: $\frac{7}{8}$" and 1" hexagon steels, $1\frac{1}{4}$" and 2" round steels. A special feature of the $1\frac{1}{4}$" equipment is the $\frac{1}{2}$" flushing hole, about twice as large as most. This gives better cleaning of the bore hole and a higher rate of advance, reduces wear and risk of steels sticking. The 'cold rolling' technique makes this wider flushing hole possible *without any loss of strength.*

Wide variety of Stone Working Tools

A single plug hole steel made by Sandvik is capable of drilling up to 1000 holes, each about 3.9". Sandvik Chisel Steels are made with rubber sleeves to reduce vibration and protect the worker. Sizes available: Plug Hole Drill Steels with bit diameters ranging from approx. $\frac{21}{32}$" to $\frac{7}{8}$". Chisel steels with bit diameters from approx. $\frac{5}{16}$" to $\frac{25}{32}$".

The World's foremost drilling unit

Sandvik Coromant extension and drill steels have been developed in close co-operation with Atlas Copco, manufacturers of rock drills and other compressed air equipment. The combination of Sandvik steels and Atlas Copco rock drills is the world's most widely used drilling unit—responsible for the drilling of more than one thousand million feet each year!

The Sandvik Coromant accessories featured here are sold and serviced throughout the world by the Atlas Copco Group of Companies. We have mentioned only the most important products and sizes: for further details, please contact your local Atlas Copco Company or Agent, or write to Atlas Copco AB, Stockholm 1, Sweden.

Atlas Copco *Manufacturers of Stationary and Portable Compressors, Rock-drilling equipment, Loaders, Pneumatic tools and Paint-spraying equipment.*

NEW BROKEN HILL CONSOLIDATED

MR. L. B. ROBINSON ON NEED TO CONSERVE CASH RESOURCES

The twenty-second annual general meeting of New Broken Hill Consolidated Limited will be held on June 24 at 37 Dover Street, London, W.1.

The following is an extract from the circulated statement of the Chairman, **Mr. L. B. Robinson.**

In 1957 the output of ore and the lead grade in ore produced were both appreciably higher than in 1956. A reduction in the average cost per ton of ore of approximately 18 per cent., compared with the previous year, was achieved, and the tonnage of lead realized in 1957 was 57,617 tons, compared with 44,044 tons in 1956.

Despite these achievements the mine trading balance for the year amounting to £1,904,035, showed a decrease of £418,369 compared with 1956, due to the severe fall in the prices of lead and zinc during the last eight months of the year. The profit before taxation amounted to £1,591,313, compared with £1,991,129 for 1956.

The company has obtained recognition as an Overseas Trade Corporation as from April 6, 1957, and derives a substantial benefit from the reduction in United Kingdom taxation. The provision for Australian and United Kingdom taxation on the profits for the year amounts to £534,217 compared with £1,116,600 for 1956. The result is a net profit for the year of £1,057,096, an increase of £182,567 on the figure for 1956. The change of status to that of an Overseas Trade Corporation as from April 6, 1957, has also released provisions made in previous years for U.K. taxation amounting to £750,000.

The amount available for distribution including the above provision for taxation no longer required and the balance of £339,635 brought forward from 1956 is £2,146,731. As indicated in the announcement for the interim dividend, the directors are recommending a final dividend of 3s. per share making a total distribution of 5s. for the year which is the same as for 1956.

The directors have given very careful consideration to the disposal of the large balance available for appropriation. The prices of lead and zinc have remained at very low levels throughout 1958 to date, and the outlook shows little promise of an early improvement. Further it has been necessary not only to budget for a reduced production of ore at which it will be difficult to maintain last year's level of cost, but also to transfer part of the labour force to additional development work entailing the use of further capital funds. These factors will all mean a considerable drain during 1958 on the Company's cash balances and the directors consider that it is essential to conserve resources to the utmost. Accordingly the directors have not felt able to recommend a larger total distribution than 5s. per share for the year and have transferred £750,000 to general reserve and £350,000 to a mine amortization reserve.

The immediate outlook is of necessity overshadowed by the statistical position of base metals and in common with other producers our earnings are bound to reflect the current level of prices for lead and zinc.

THE CONSOLIDATED ZINC CORPORATION

REDUCTION IN TRADING PROFITS

The ninth annual general meeting of the Consolidated Zinc Corporation Limited will be held on June 24, at 37 Dover Street, London, W.1.

The following is an extract from the circulated statement of the Chairman, **Mr. L. B. Robinson :**

The severe fall in the prices of lead and zinc during the last eight months of the year caused a substantial reduction in the trading profits for 1957.

The Zinc Corporation Limited again increased ore production and achieved a lower cost per ton of ore at Broken Hill than for the previous year. Nevertheless, the reduced average prices realized for lead and zinc concentrates resulted in a much lower profit than in 1956.

Consolidated Zinc Proprietary Limited had a satisfactory year and showed a considerably increased profit.

Imperial Smelting Corporation Limited had a lower output of zinc, but deliveries of alloys were considerably greater than in 1956. Profit margins on most products were reduced and, overall, the profits from trading for the year in the United Kingdom were somewhat less than in 1956.

Income from trade investments at £941,688 showed an increase mainly due to higher dividends from New Broken Hill Consolidated Limited and British Titan Products Company Limited. Interest on Government securities and other interest and miscellaneous income, at £325,135, was also higher than in 1956.

The consolidated profit of the Group, before mining royalty and taxation, amounted to £4,322,442, compared with £6,123,432 for 1956.

Due to the considerably reduced charge for royalty and taxation, the consolidated net profit for the year, at £1,769,986, was only £274,397 lower than the net profit for 1956. Proposed final dividend of 2s. 6d. per share, compared with 3s. last year, giving a total of 3s. 9d. compared with 4s. 6d. last year.

In the prevailing conditions of world markets in which, in common with many other commodities, a surplus of lead and zinc has developed, both the Zinc Corporation and New Broken Hill Consolidated have budgeted for a reduced production of ore and recoverable metals during the current year.

The operation of the Imperial Smelting process on the Avonmouth site made further satisfactory progress during the year.

Commonwealth Aluminium Corporation Pty. Limited, in which the British Aluminium Company Limited will be associated with us, has during the year made substantial progress in its investigations and planning for the development of the bauxite deposits at Weipa, on the west coast of Cape York Peninsular.

In the current year our earnings must be seriously affected by the present low level of prices. However, in spite of the unfavourable features in the immediate outlook for commodity prices and in the statistical position of the metals which at present provide our main source of income, we remain confident that the world will continue to progress to higher standards of living and that not only demand will increase, but that the prices of the metals in which we are interested will, in time, return to more remunerative levels. Meanwhile, we consider the projects in hand to improve the efficiency and economic return from our existing operations are essential, even though the timing and rate of progress of these projects must necessarily be governed by our financial resources.

News and Results—*Continued*

Mary Kathleen Acid Plant.—The acid plant at Mary Kathleen, near Mount Isa, went into production this week. Capacity of the plant is 120 tons daily, which will be used in the treatment of uranium from the Mary Kathleen field.

West Spaarwater.—At the end of 1957, current assets of £571 compared with liabilities of £31,796 in the balance sheet of West Spaarwater, whose property in the Far East Rand is on a caretaking basis. The year's general expenses totalled £2,535. Meeting, June 27.

Higher Lake George Output.—An interim report from Lake George Mining Corporation states that in order to meet the threat to operations caused by falling world metal prices, output at the mine was stepped up from 16,000 to 18,000 tons monthly as from the first operating period of 1958. It is also announced that a contract calling for the supply of 10,000 to 15,000 tons of pyrite concentrates has been secured, over and above the arrangements with the traditional buyers at Port Kembla. Lake George's pyrite output is of the order of 30,000 tons annually.

Kaduna's 1957 Results.—Both Kaduna Syndicate and Kaduna Prospectors enjoyed a successful year in 1957, the last before the onset of tin restriction due to reorganized selling arrangements which led to a running down of stocks with a corresponding increase in sale. After taxation of £4,482 (1956, £2,467) Kaduna Prospectors earned a net profit of £6,327 compared with £1,723 in the previous year. Actual mining profit of Kaduna Syndicate was only marginally higher, but lower taxation (£15,661 against £26,666) enabled the net profit to come out at £26,419, over £10,000 higher than last year. Both dividends are raised, Prospectors' to 8d. making a total of 10d. for the year against 4d. in 1956, while Syndicate's total is increased to 9d. from 6d. by a final of 7d. As from December 1 last both companies acquired provisional O.T.C. status.

West African Gold Production for January—March, 1958

Company	Jan./March 1958			Months since year end	Current Financial Year Total to date			Last Financial Year Total to date		
	Tons (000)	Yield (oz.)	Profit (£000)		Tons (000)	Yield (oz.)	Profit (£000)	Tons (000)	Yield (oz.)	Profit (£000)
A.B.A.	184·4	45,046	143·1	6	372·7	86,487	251·1	350·6	71,228	157·3
Ariston ...	125·5	36,526	121·5	6	248·6	75,091	272·8	235·9	69,545	267·8
Ashanti	90·0	67,500	311·3	6	172·4	129,809	629·2	164·9	133,309	654·3
Bibiani (1927)	103·5	20,700	21·6	6	193·5	40,200	44·3	180·0	39,000	51·8
Bremang* ..	2444·8	13,754	62·7	3	2444·8	13,754	62·7	1860·2	10,251	36·2
Ghana M.R.	34·8	12,492	40·7	9	104·1	36,656	120·4	106·7	33,958	101·0
Konongo ..	5·6	4,040	15·6	6	31·9	23,645	91·8	28·5	23,723	97·8

* Cu. yds. dredged. Profit figures include premium revenue.

Southern Rhodesian Gold Returns

Company	Jan./March 1958			Months since year end	Current Financial Year Total to date			Last Financial Year Total to date		
	Tons (000)	Yield (oz.)	Profit (£000)		Tons (000)	Yield (oz.)	Profit (£000)	Tons (000)	Yield (oz.)	Profit (£000)
Arcturus	19·8	6,557	27·2	9	62·5	19,005	83·7	31·4	11,410	43·6
Cam & Motor .	93·7	29,694	121·8	9	271·8	85,343	360·5	216·0	73,916	354·8
Falcon Mines	61·3	11,669	31·7	6	119·3	22,482	60·5	114·2	21,297	59·1
Globe & Ph'nix	17·5	10,582	64·0	3	17·5	10,582	64·0	18·2	10,535	63·8
Motapa Gold .	39·4	5,187	L2·5	3	39·4	5,187	12·5	51·0	6,704	2·9
Muriel Mine ..	12·8	6,022	30·0	9	37·8	17,559	90·2	35·6	11,929	97·6
Phoenix Prince	32·1	3,504	2·0	12	132·8	14,898	17·4	126·6	14,581	25·7

L indicates a loss.

Metal and Mineral Trades

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